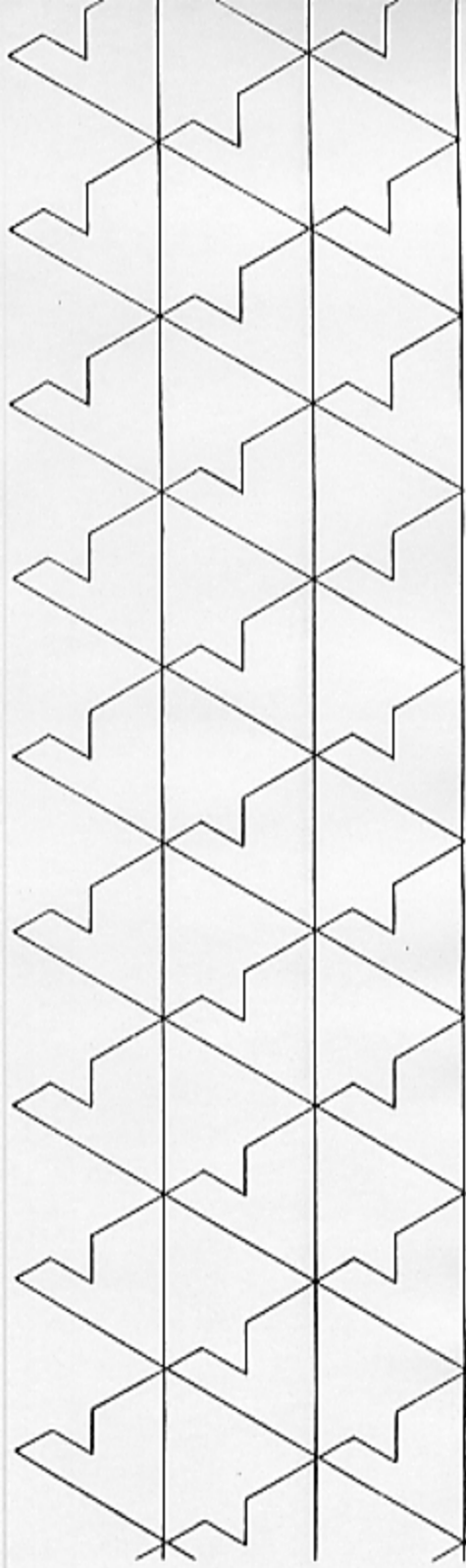


**LAW ENGINEERING
TESTING COMPANY**

REPORT OF SUBSURFACE EXPLORATION
SETTLEMENT STUDY
CRANEY ISLAND DREDGE SPOIL
PORTSMOUTH, VIRGINIA
LETCO PROJECT NK5-1175C

PREPARED FOR

DEPARTMENT OF THE ARMY
NORFOLK, VIRGINIA



CLAY ENGINEERING TESTING COMPANY
CH. AXIAL SHEAR TEST

PROJECT NAME: SING AND INC-1111 C OF E CRANEY ISLAND
HOLDING NUMBER: IS 2-3 US 4
SAMPLE IDENTIFICATION: 10 1000 TO V. SOFT DARK GRAY CLAY. FINE SAND SOME VOIDS

CONSOLIDATED UNDRAINED COMPRESSION TEST WITH STRAIN CONTROL

PROVING RING 220 CALIBRATED 11 / 1984

PROPERTIES

SPECIFIC GRAVITY = 2.64
LIQUID LIMIT = 113
PLASTIC LIMIT = 39
MEASURED VOLUME CHANGE = -5.538 IN3
CELL PRESSURE = 3.89 KSF
CONSOLIDATION PRESSURE = 1.01 KSF

PROPERTY INITIAL CONSOLIDATED

HEIGHT = 5.803
VOID RATIO = 2.427
AREA = 5.830 SQ IN
PERCENT MOISTURE = 99.52 PERCENT
WET DENSITY = 90.52 PCF
DRY DENSITY = 42.42 PCF
PERCENT SATURATION = 100.01 PERCENT

NOTE - CONSOLIDATED PROPERTIES CALCULATED FROM MEASURED VOLUME CHANGE

OUTPUT DATA

LOADING NUMBER	STRAIN (IN/IN)	SHEAR STRAIN	VOLUME STRAIN (CC/CC)	VOID RATIO	A FACTOR
1	0.0000	0.0000	0.000	2.626	0.00
2	0.0146	0.0146	0.000	2.626	1.158
3	0.0414	0.0414	0.000	2.626	1.293
4	0.0739	0.0739	0.000	2.626	1.355
5	0.2632	0.2632	0.000	2.626	1.176
6	0.3380	0.3380	0.000	2.626	1.264
7	0.4496	0.4496	0.000	2.626	1.280
8	0.6287	0.6287	0.000	2.626	1.256
9	0.9077	0.9077	0.000	2.626	1.157
10	1.0002	1.0002	0.000	2.626	1.235
11	1.0816	1.0816	0.000	2.626	1.251
12	1.0431	1.0431	0.000	2.626	1.246
13	1.5257	1.5257	0.000	2.626	1.298

LOADING NUMBER	SIG (KSF)	TUP (KSF)	EFF SIG1 (KSF)	EFF SIG1 (KSF)	TOTAL STRESS RATIO	EFF STRESS RATIO	Q (KSF)	P (KSF)	Q/P
1	1.01	0.00	1.01	1.01	1.00	1.00	0.00	1.01	0.00
2	1.14	0.00	0.99	0.99	1.13	1.16	13	90	15
3	1.36	0.00	1.00	1.00	1.35	1.64	35	67	53
4	1.46	0.00	1.00	1.00	1.43	1.96	44	60	72
5	1.51	0.00	0.92	0.92	1.49	2.19	50	59	85

LOADING NUMBER	SIG (KSF)	TUP (KSF)	EFF SIG1 (KSF)	EFF SIG1 (KSF)	TOTAL STRESS RATIO	EFF STRESS RATIO	Q (KSF)	P (KSF)	Q/P
6	1.34	0.00	0.84	0.84	1.33	2.62	54	51	1.06
7	1.56	0.00	0.85	0.85	1.55	2.83	55	48	1.14
8	1.57	0.00	0.84	0.84	1.56	2.86	56	49	1.16
9	1.53	0.00	0.82	0.82	1.52	2.79	52	38	90
10	1.49	0.00	0.80	0.80	1.48	2.43	48	38	83
11	1.58	0.00	0.85	0.85	1.47	2.13	47	37	82
12	1.47	0.00	0.89	0.89	1.46	2.07	46	59	79
13	1.44	0.00	0.88	0.88	1.43	1.98	43	59	74

EAS ENGINEERING TESTING COMPANY
TRIAXIAL SHEAR TEST

PROJECT NAME & NO ARE HNS-1175 C OF C CRANEY ISLAND
BORING NUMBER IS UD-2 & 14 4.
CAPILL IDENTIFICATION IS VERY SOFT DARK GRAY CLAY W/ LITTLE FINE SAND;
SOME VOIDS

CONSOLIDATED UNDRAINED COMPRESSION TEST WITH STRAIN CONTROL

PROVING RING 120 CALIBRATED 11 / 1984

PROPERTY INITIAL CONSOLIDATED

HEIGHT = 5.775 5.491 INCHES
VOID RATIO = 4.140 3.479
AREA = 6.202 5.684 SQ IN
PERCENT MOISTURE = 153.12 129.43 PERCENT
WET DENSITY = 82.79 83.92 PCF
DRY DENSITY = 22.63 37.43 PCF
PERCENT SATURATION = 99.8 100.01 PERCENT

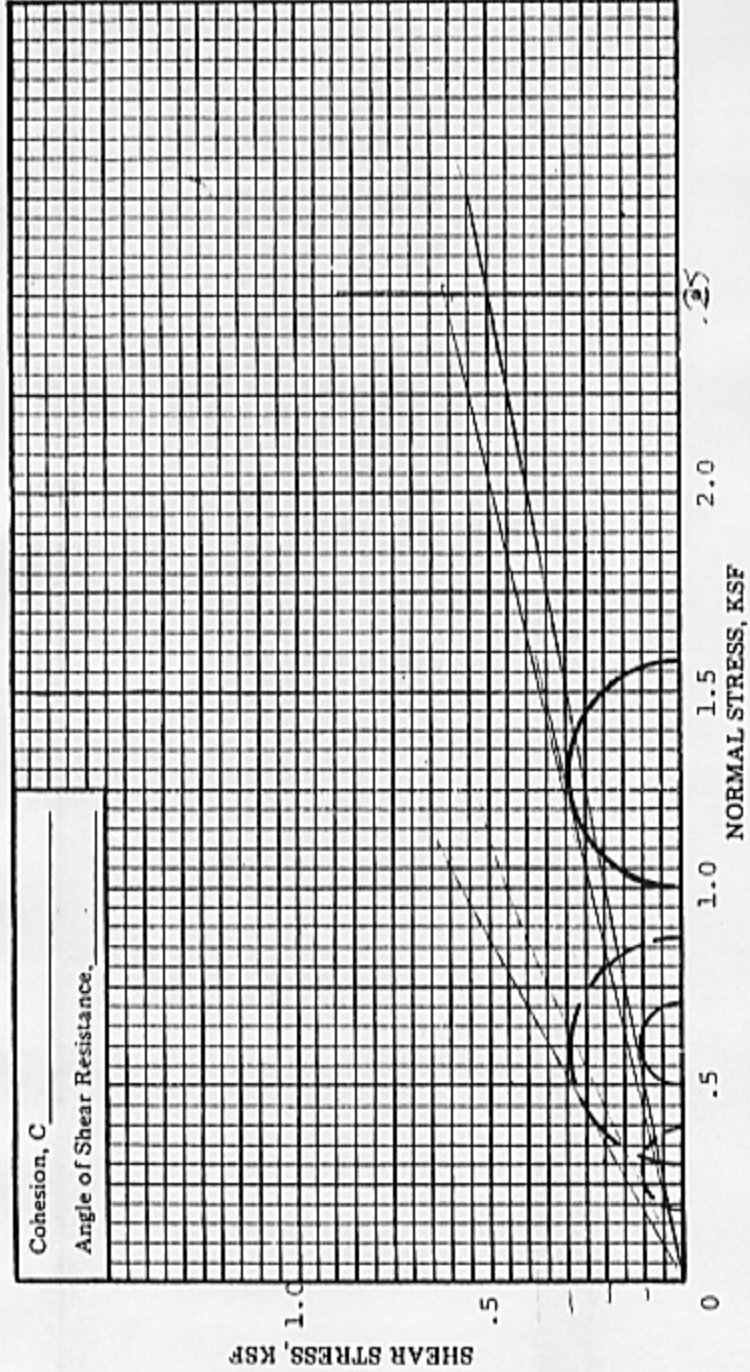
NOTE - CONSOLIDATED PROPERTIES CALCULATED FROM MEASURED VOLUME CHANGE

OUTPUT DATA

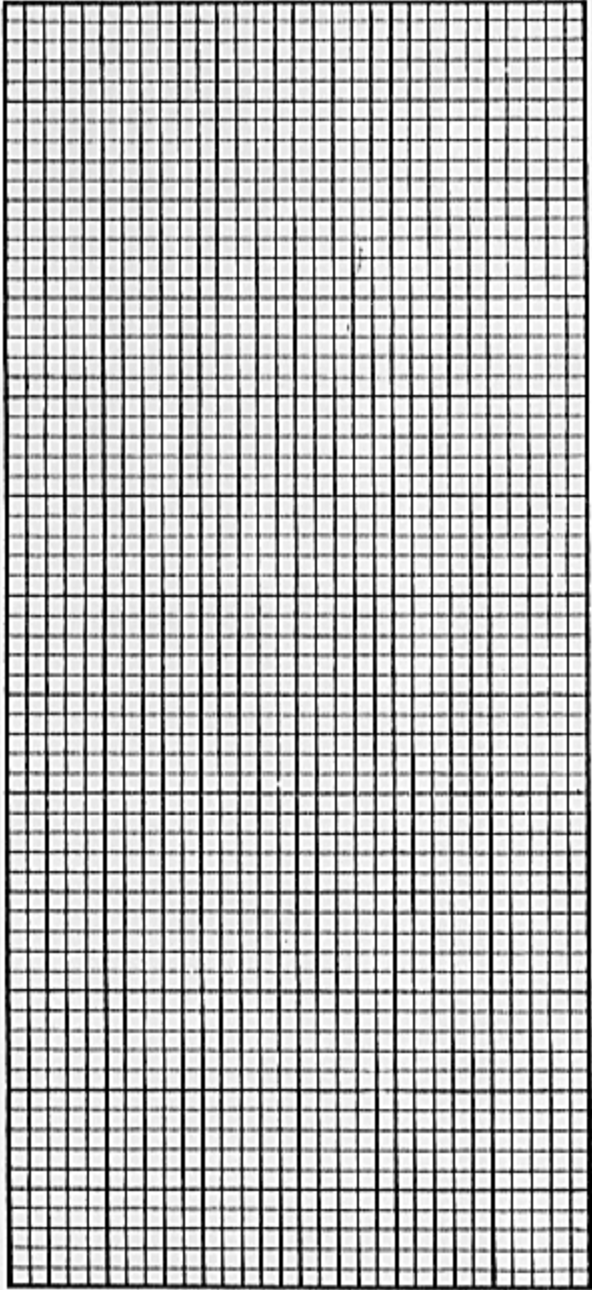
READING NUMBER	STRAIN (IN/IN)	SHEAR STRAIN	VOLUME STRAIN (CC/CC)	VOID RATIO	A FACTOR
1	0.00000	0.00000	0.000	2.478	0.00
2	0.01457	0.01457	0.000	3.478	1.935
3	0.03282	0.03282	0.000	3.478	1.978
4	0.13477	0.13477	0.000	3.478	2.101
5	0.25590	0.25590	0.000	3.478	1.944
6	0.44802	0.44802	0.000	3.478	1.988
7	0.63378	0.63378	0.000	3.478	1.830
8	0.81590	0.81590	0.000	3.478	1.941
9	0.99620	0.99620	0.000	3.478	1.888
10	1.17832	1.17832	0.000	3.478	1.740
11	1.35498	1.35498	0.000	3.478	1.855
12	1.53328	1.53328	0.000	3.478	1.764
13	1.71376	1.71376	0.000	3.478	1.817
14	1.88859	1.88859	0.000	3.478	1.563
15	2.06343	2.06343	0.000	3.478	1.840
16	2.23280	2.23280	0.000	3.478	1.849

READING NUMBER	SIG1 (KSF)	POV (KSF)	EFF SIG1 (KSF)	EFF SIG3 (KSF)	TOTAL STRESS RATIO	EFF STRESS RATIO	Q (KSF)	P (KSF)	Q/P
1	50	0.00	50	50	1.00	1.00	0.00	50	0.00
2	50	18	42	32	1.18	1.29	0.9	35	2.4
3	62	23	39	27	1.29	1.42	1.2	31	3.7
4	64	29	35	21	1.27	1.64	1.4	26	5.3
5	68	34	33	13	1.35	2.23	1.8	21	8.7
6	68	34	34	17	1.35	2.06	1.8	22	7.8
7	70	34	34	14	1.39	2.36	2.0	21	9.4
8	70	37	32	10	1.38	2.48	1.9	19	9.9
9	69	36	34	11	1.37	2.38	1.9	21	9.0
10	62	32	37	18	1.37	2.02	1.8	24	7.6
11	68	34	34	17	1.36	2.08	1.8	23	7.9
12	70	35	35	16	1.39	2.26	2.0	22	8.9
13	70	32	39	15	1.38	2.24	1.9	22	8.9
14	71	30	39	16	1.41	2.11	2.1	25	8.4
15	71	33	37	17	1.40	2.10	2.0	24	8.5
16	70	37	33	14	1.39	2.47	2.0	20	9.8

MOHR DIAGRAM FOR FAILURE CONDITIONS



STRESS-STRAIN CURVES



NORMAL STRESS, KSF

Soil Classification Soft Dark Gray Clay (CH)

TRIAXIAL SHEAR TEST

Type of Test: Consolidated Undrained w/pp
 Type of Specimen: Undisturbed
 Rate of Shear: .008 in/min
 Boring: B-5 Depth: 6 & 16 ft
 Job No. 1175 Date: 12-30-85

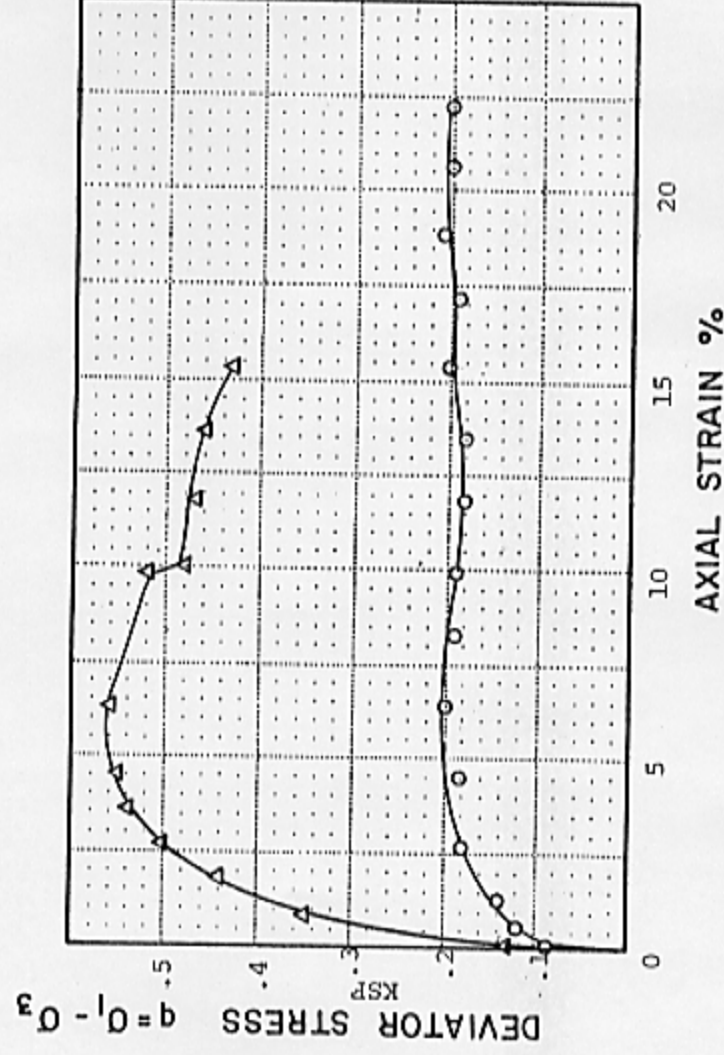
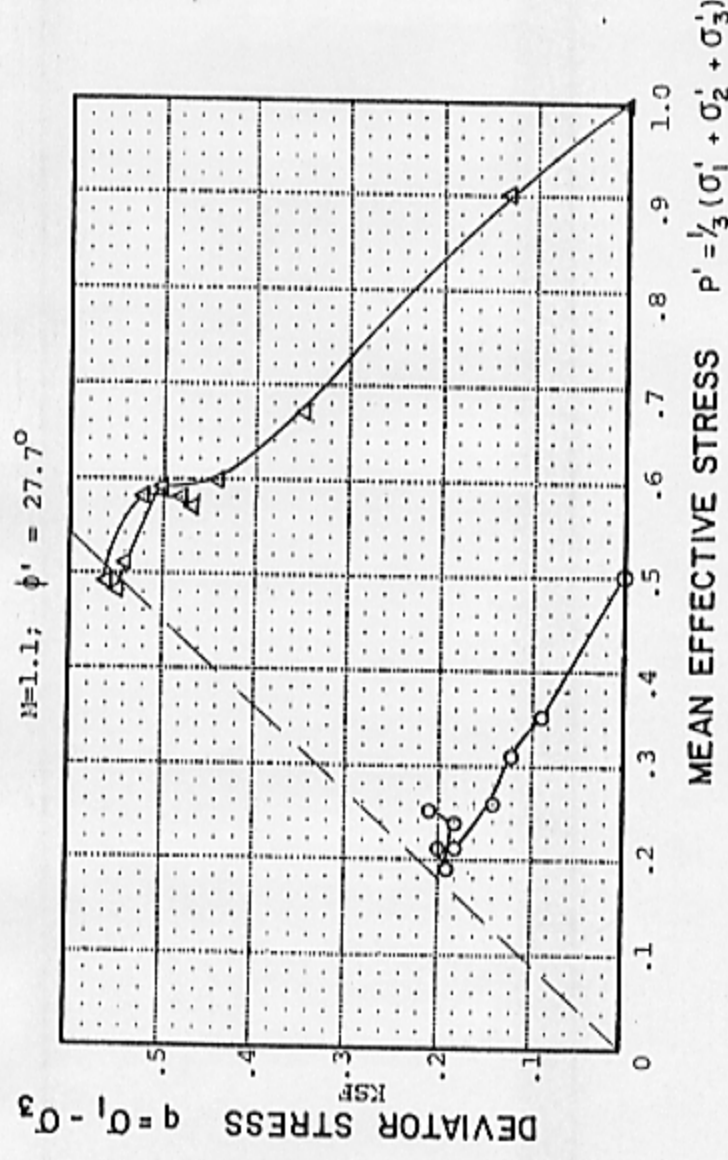
SAMPLE NO.	(1)	(2)	(3)
Confining Pressure, ksf	0.5	1.0	
Initial Length, In.	5.78	5.80	
Initial Diameter, In.	2.86	2.86	
Wet Unit Weight, pcf	82.8	83.3	
Moisture Content, %	153.7	115.3	
Initial Void Ratio	4.140	3.257	
Initial Percent Saturation, %	99	93	

Drawn: E.M.P.
Checked: RGH
Date: 12-30-85

TRIAxIAL TEST RESULTS

Craneey Island

HK5-1175



SAMPLE NUMBER	1O	2Δ	3
Initial: Water Content(%)	153.7	115.3	
Wet Density(pcf)	82.8	83.3	
Dry Density(pcf)	32.6	38.7	
Consolidation Pressure (ksf)	0.5	1.0	
NOTES: Soft Dark Gray Clay, Trace Fine Sand and Voids (CH)			



LAW ENGINEERING
TESTING COMPANY
geotechnical, environmental & construction materials consultants
GREENBRIER INDUSTRIAL PARK
2220 PARAMOUNT AVENUE • SUITE 106
CHESAPEAKE, VIRGINIA 23320
(804) 424-5560

January 16, 1986

Department of the Army
Norfolk District, Corps of Engineers
Fort Norfolk, 803 Front Street
Norfolk, Virginia 23510-1096

Attention: Mr. Mathew Byrne

Subject: Report of Subsurface Exploration
Settlement Study
Craney Island Dredge Spoil
Portsmouth, Virginia
LETCO Project NK5-1175C

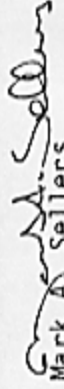
Gentlemen:

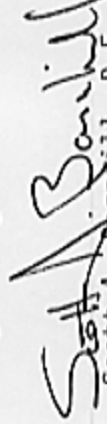
Law Engineering is pleased to present the results of our subsurface exploration for the referenced project. Our services were performed in accordance with your delivery Order Number 3 of our annual geotechnical contract with your organization. Test Boring Records and laboratory data are presented in Appendices A and B, respectively.

We have enjoyed providing these services to you and trust that you will contact us at your convenience with any questions that you may have regarding this report or the project in general.

Sincerely,

LAW ENGINEERING


Mark A. Sellers
Project Engineer


Scott A. Barnhill, P.E.
Senior Geotechnical Engineer
Manager-Norfolk Office

MAS/SAB:ba

Attachments

FIELD OPERATIONS

The general field procedures employed by Law Engineering Testing Company are summarized in ASTM Specification D-420 which is entitled "Investigating and Sampling Soils and Rocks for Engineering Purposes." This recommended practice lists recognized methods for determining soil and rock distribution and groundwater conditions. These methods include geophysical and in-situ methods as well as borings.

Borings are drilled to obtain subsurface samples using one of several alternate techniques depending upon the subsurface conditions. These techniques are:

- (a) Continuous 2-1/2 or 3-1/4 inch I.D. hollow stem augers;
- (b) Wash borings using roller cone or drag bits (mud or water);
- (c) Continuous flight augers (ASTM Spec. D-1452).

The subsurface conditions encountered during drilling are reported on a field test boring record by the Chief Driller. The record contains information concerning the boring method, samples attempted and recovered, indications of the presence of various materials such as coarse gravel, cobbles, etc., and observations of groundwater. It also contains the driller's interpretation of the soil conditions between samples. Therefore, these boring records contain both factual and interpretive information. The field boring records are on file in our office.

The soil samples plus the field boring records are reviewed by a geotechnical engineer. The engineer classifies the soils in general accordance with the procedures outlined in ASTM Specifications D-2488 and prepares the final boring records which are the basis for all evaluations and recommendations.

The final boring records represent our interpretation of the contents of the field records based on the results of the engineering examination and tests of the field samples. These records depict subsurface conditions at the specific locations and at the particular time when drilled. Soil conditions at other locations may differ from conditions occurring at these boring locations. Also, the passage of time may result in a change in the subsurface soil and groundwater conditions at these boring locations. The lines designating the interface between soil strata on the records and on profiles represent approximate boundaries. The transition between materials may be gradual. The final records are included in this appendix.

The detailed data collection methods used during this study are discussed on the following pages in this appendix.

WATER LEVEL READINGS

Water table readings are normally taken in conjunction with borings and are recorded on the boring records. These readings indicate the approximate location of the hydrostatic water table at the time of our field investigation. Where impervious soils are encountered (clayey soils) the amount of water seepage into the boring is small, and it is generally not possible to establish the location of the hydrostatic water table through water level readings. The groundwater table may also be dependent upon the amount of precipitation at the site during a particular period of time. Fluctuations in the water table should be expected with variations in precipitation, surface run-off, evaporation and other factors.

The time of boring water level reported on the boring records is determined by field crews as the drilling tools are advanced. The time of boring water level is detected by changes in the drilling rate, soil samples obtained, etc.

Additional water table readings are generally obtained approximately one day after the borings are completed. The time lag of one day is used to permit stabilization of the groundwater table which has been disrupted by the drilling operations. The readings are taken by dropping a weighted line down the boring or using an electrical probe to detect the water level surface.

Occasionally the borings will cave-in, preventing water level readings from being obtained or trapping drilling water above the caved-in zone. The cave-in depth is also measured and recorded on the boring records.

KEY TO SOIL SYMBOLS AND CLASSIFICATION

	FILL		GW - Well graded gravels
	CL - Low plasticity inorganic clays		OL - Low plasticity organic silts and clays
	CH - High plasticity inorganic clays		OH - High plasticity organic silts and clays
	ML - Low plasticity inorganic silts and very fine sands		SM - Silty sands
	MH - High plasticity inorganic silts		GM - Silty gravels
	SP - Poorly graded sands		SC - Clayey sands
	SW - Well graded sands		GC - Clayey gravels
	GP - Poorly graded gravels		SP-SM - Typical Dual Classification

Decomposed Rock - A transitional material between soil and rock which retains the relic structure of the parent rock and exhibits penetration resistances between 60 blows per foot and 100 blows/2 inches of penetration

CORRELATION OF PENETRATION RESISTANCE WITH RELATIVE DENSITY AND CONSISTENCY

NO. OF BLOWS, N	RELATIVE DENSITY	PARTICLE SIZE IDENTIFICATION
0-4	Very Loose	BOULDERS - Greater than 12 inches
5-10	Loose	COBBLES - 3 inches to 12 inches
11-30	Firm	GRAVEL: - Coarse - 3/4 inch to 3 inches
31-50	Dense	- Fine - 4.76mm to 3/4 inch
OVER 50	Very Dense	
	<u>CONSISTENCY</u>	
	Very Soft	SAND: - Coarse - 2mm to 4.76mm
	Soft	- Medium - 0.42mm to 2mm
	Firm	- Fine - 0.075mm to 0.42mm
	Stiff	
	Very Stiff	SILT & CLAY - Less than 0.075mm
	Hard	
	Very Hard	

SOIL LABORATORY TEST DATA SYMBOLS FOR BORING LOGS

γ_w - WET UNIT WEIGHT (PCF)	w - MOISTURE CONTENT (%)
e - VOID RATIO	LL - LIQUID LIMIT (%)
q_u - UNCONFINED COMPRESSIVE STRENGTH (KSF)	PL - PLASTIC LIMIT (%)
	PL w LL

TEST BORING RECORD

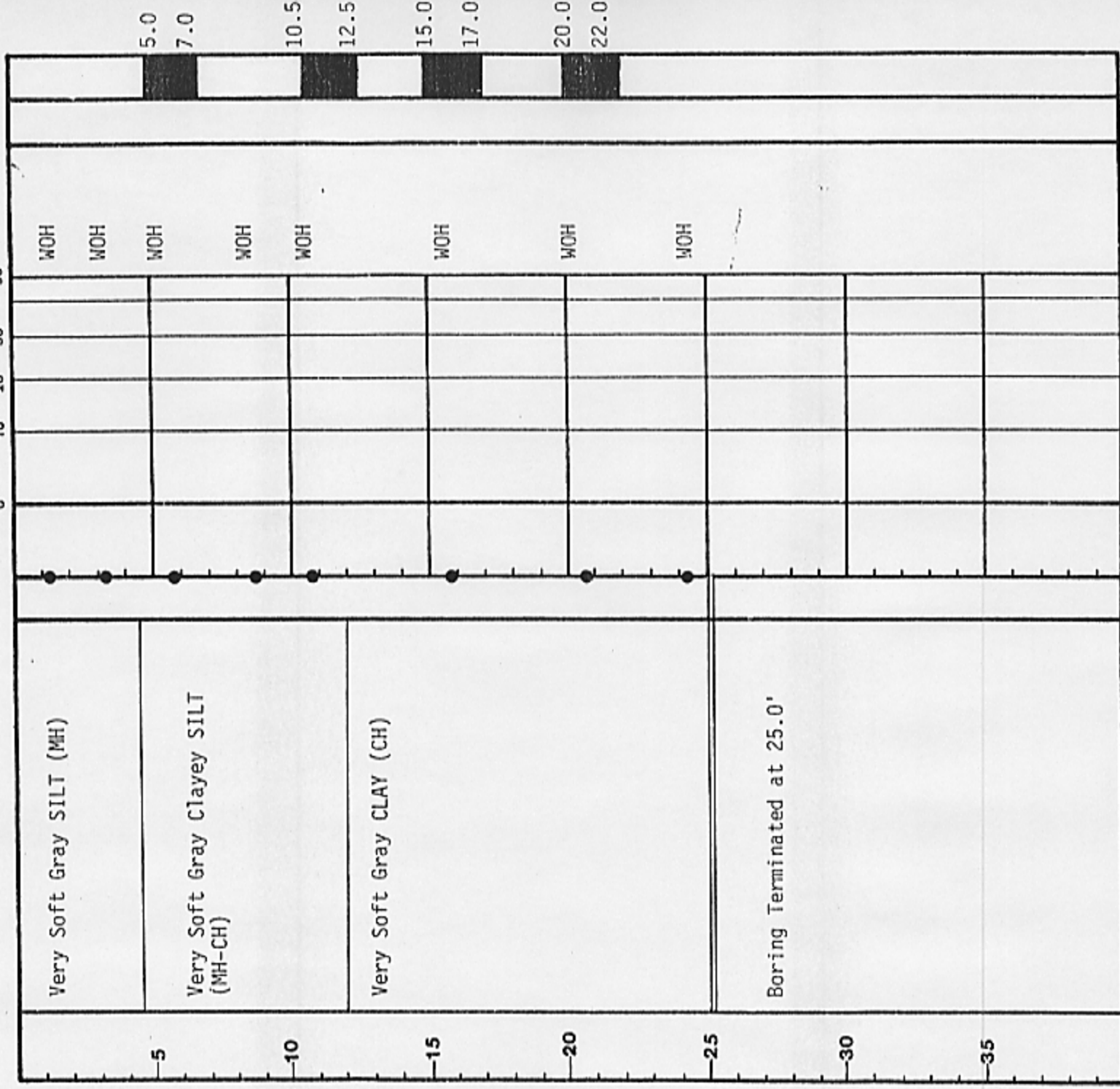
BLOWS
PER
6 INCHES REC

• PENETRATION
BLOWS PER FT.

DEPTH
FT.

ELEV

0 10 20 30 40 50

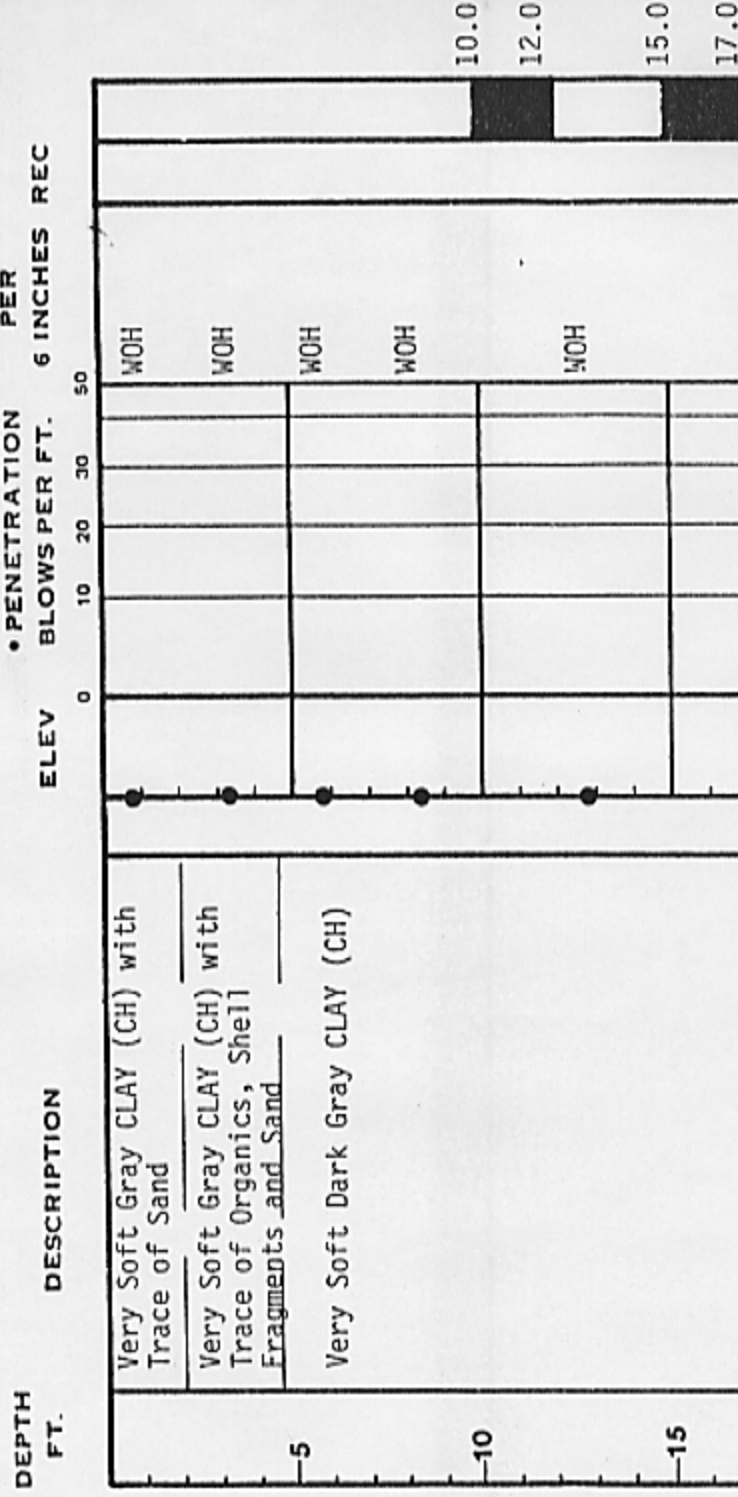


Boring Terminated at 25.0'

JOB NO. NK5-1175C DATE 9-17-85 PAGE 1 OF 1 BORING NO. B-1



TEST BORING RECORD



JOB NO. NK5-1175C DATE 9-24-85 PAGE 1 OF 1 BORING NO. B-2



TEST BORING RECORD

BLOWS
PER
PENETRATION
PER
6 INCHES REC

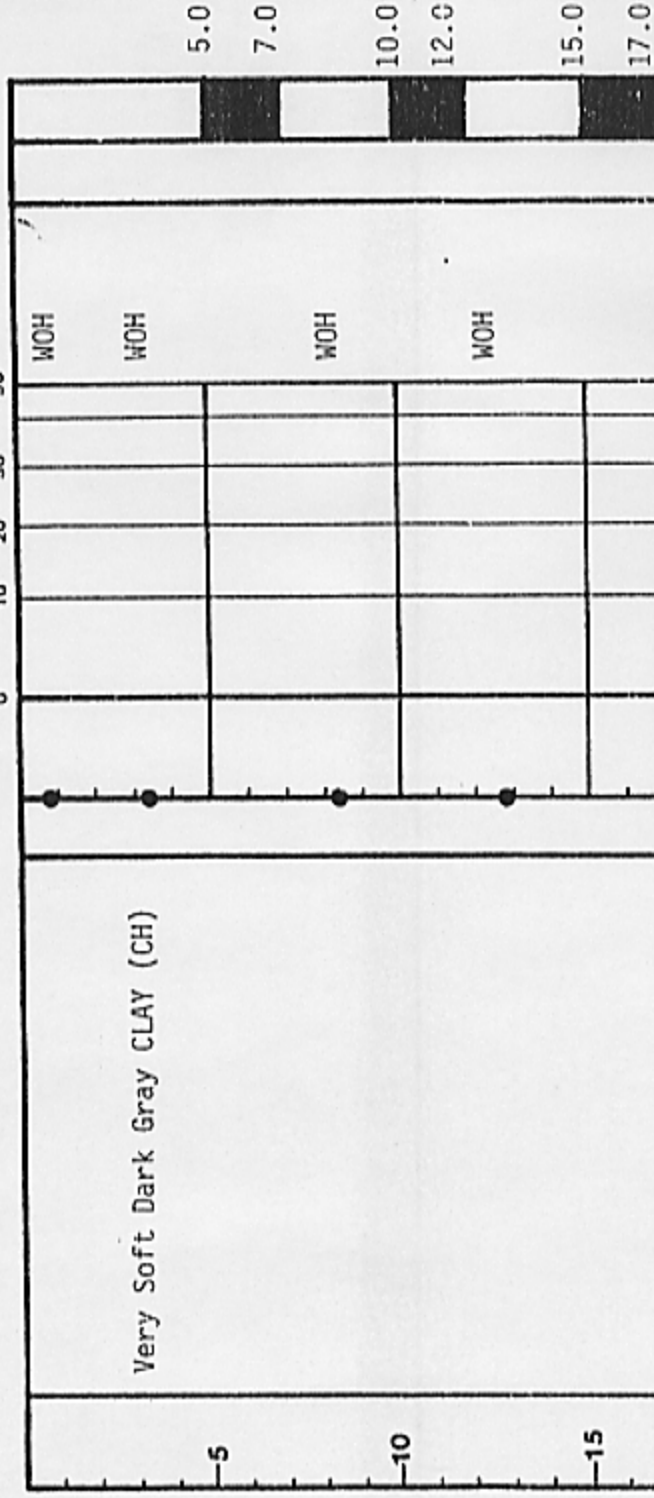
DEPTH
FT.

DESCRIPTION

ELEV

BLOWS PER FT.

0 10 20 30 40 50



JOB NO. NK5-1175C DATE 9-24-85

PAGE 1

OF 1

BORING NO.

B-3



TEST BORING RECORD

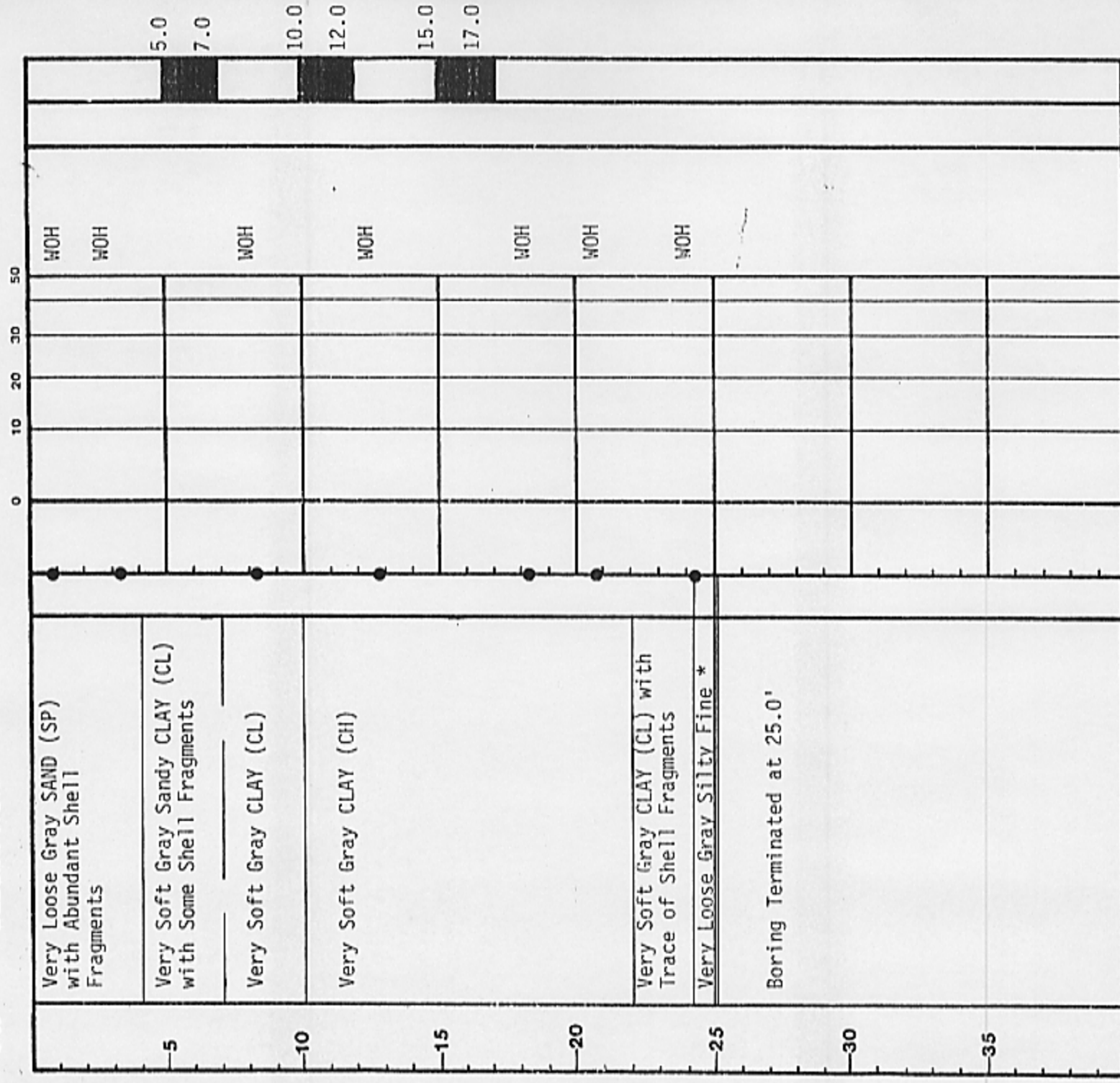
BLOWS
PER
6 INCHES REC

• PENETRATION
BLOWS PER FT.

ELEV

DEPTH
FT.

DESCRIPTION



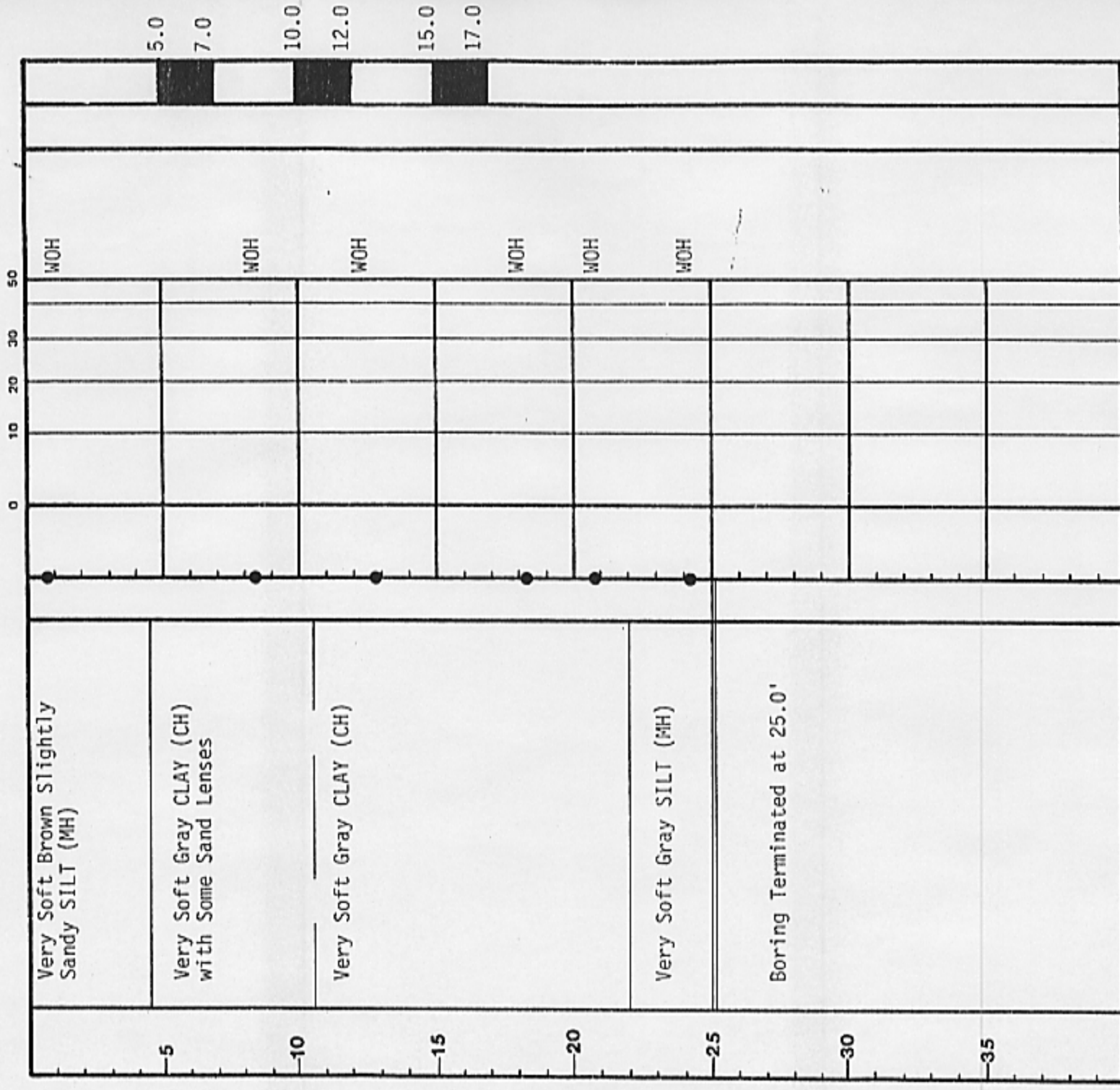
* SAND (SM)

JOB NO. NK5-1175C DATE 9-28-85 PAGE 1 OF 1 BORING NO. B-4



TEST BORING RECORD

DEPTH FT. DESCRIPTION ELEV • PENETRATION BLOWS PER 6 INCHES REC



JOB NO. NK5-1175C DATE 9-30-85

PAGE 1 OF 1 BORING NO. B-5

TEST BORING RECORD

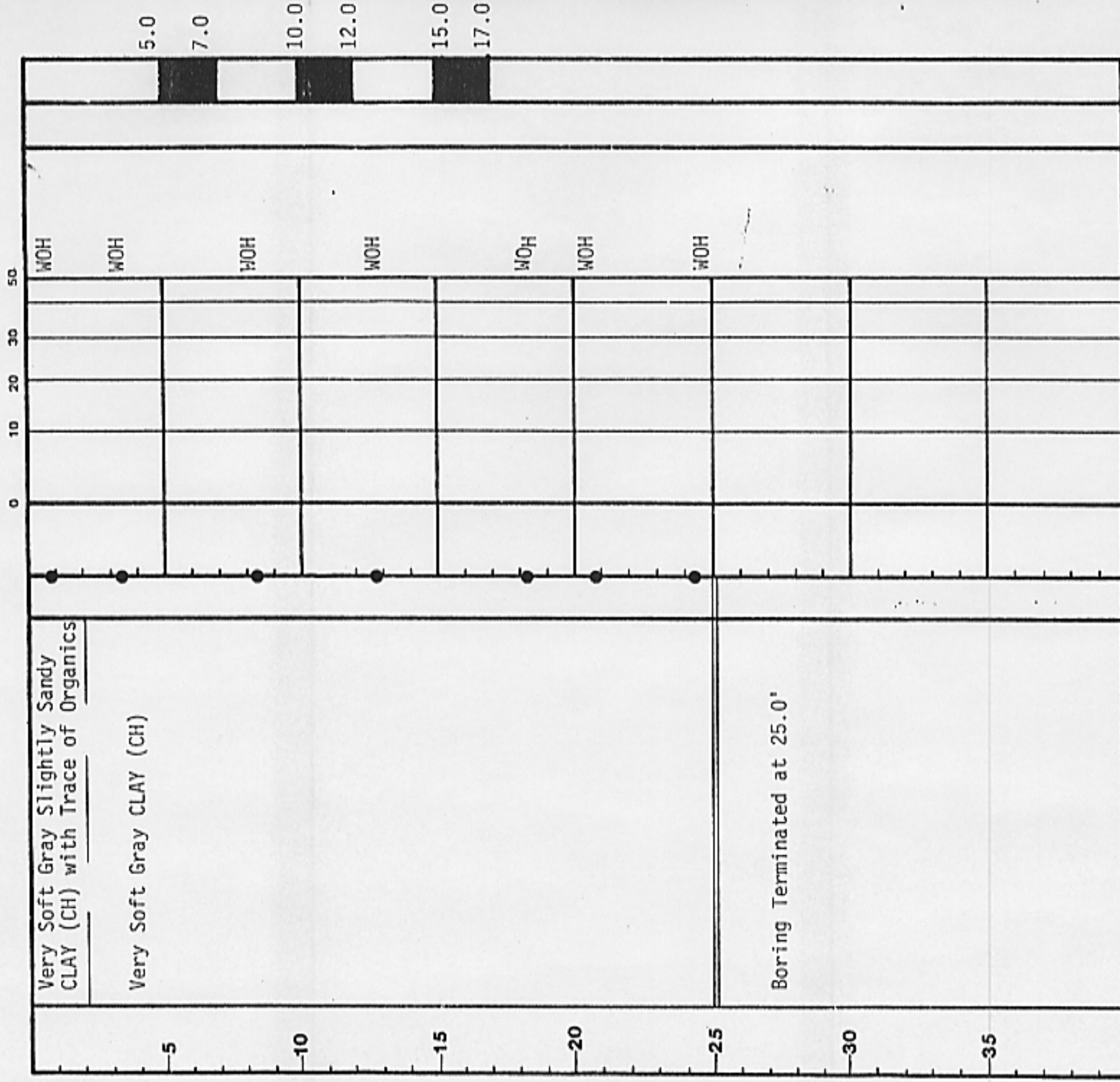
DEPTH
FT.

DESCRIPTION

ELEV

• PENETRATION
BLOWS PER FT.

BLOWS
PER
6 INCHES REC



JOB NO. NK5-1175C DATE 10-1-85 PAGE 1 OF 1 BORING NO. B-6



LAW ENGINEERING TESTING COMPANY

SOIL DATA SUMMARY



BORING NO.	SAMPLE DEPTH (FEET)	SAMPLE TYPE	SOIL CLASSIFICATION	UNIT WEIGHT Wet pcf Dry	% FINER NO. 200 SIEVE	SPECIFIC GRAVITY	VOID RATIO	NATURAL MOISTURE %	ATTERBERG LIMITS L.L. P.L. P.I.	ADDITIONAL TESTS CONDUCTED (SEE NOTE #3)
B-1	5-7	UD-1	CH	82.6	2.69	161.5	159	47	112	C
B-1	10.5-12.5	UD-2	CH	88.4	2.70	145.3	125	35	90	C
B-1	15-17	UD-3	CH	86.8	2.69	93.3	154	42	112	C
B-1	20-22	UD-4	CL	88.8	2.66	107.1	34	19	17	C
B-1	0-1.5	SS-1	MH			No	61	32	29	
B-1	2.5-4.0	SS-2	MH			Sample	85	46	39	
B-1	5-6.5	SS-3	MH			152.0	85	49	36	
B-1	7.5-9.0	SS-4	CH			175.7	149	41	108	
B-1	10-11.5	SS-5	MH			132.2	93	41	52	
B-1	15-16.5	SS-7	CH			146.7	99	41	58	
B-1	20-21.5	SS-9	CH			144.1	103	33	70	
B-1	23.5-25	SS-10	CH			142.7	108	40	68	
B-2	11.0	UD-1	CH	80.2	2.68	155.6	53	22	31	
B-2	16.0	UD-2	CH	78.4	2.70	153.7	127	35	92	
B-2	1.0	SS-1	CH			51.7	51	20	31	
B-2	2-2.5	SS-2	CH		2.68	88.3	122	41	81	
B-2	5.5	SS-3	CH			98.6	91	31	60	
B-2	8.0	SS-4	CH			112.8	130	42	88	
B-2	13.0	SS-6	CH			81.8	95	34	61	
B-2		SS-7	CH			133.7	141	41	100	

NOTES: 1. Soil tests in accordance with applicable ASTM Standards
2. Soil classification in accordance with Unified Soil Classification System
3. 1 = Triaxial Test
U = Unconfined Compression Test
C = Consolidation Test
P = Proctor Test
DS = Direct Shear
HP = Hand Penetrometer Test
TV = Torvane Test

PROJECT NAME
PROJECT NUMBER
PROJECT LOCATION

Crane Island
NK5-1175C

Portsmouth, Virginia

LAW ENGINEERING TESTING COMPANY

SOIL DATA SUMMARY



BORING NO.	SAMPLE DEPTH (FEET)	SAMPLE TYPE	SOIL CLASSIFICATION	UNIT WEIGHT pcf Dry	% FINER NO. 200 SIEVE	SPECIFIC GRAVITY	VOID RATIO	NATURAL MOISTURE %	ATTERBERG LIMITS L.L. P.L. P.I.	ADDITIONAL TESTS CONDUCTED (SEE NOTE #3)
B-2	20-21.5	SS-9	CH					134.5	118 35 83	
B-2	23.5-25	SS-10	CH					152.3	129 38 91	
B-3	6.0	UD-1	CH	85.9		No Sample		140.8	No Sample	
B-3	11.0	UD-2	CH	86.3	2.69			95.5	80 24 56	
B-3	16.0	UD-3	CH	95.4	2.69			76.5	93 32 61	
B-3	0-1.5	SS-1	CH					69.4	79 33 46	
B-3	2.5-4	SS-2	CH					69.9	95 28 67	
B-3	7.5-9	SS-3	CH					140.8	128 40 88	
B-3	12-13.5	SS-4	CH					111.4	116 37 79	
B-3	17-19.5	SS-5	CH					129.6	143 39 104	
B-3	20-21.5	SS-6	CH					119.6	132 39 93	
B-3	23.5-25	SS-7	CH					126.0	113 36 77	
B-4	6.0	UD-1	CL	110.8	2.76			47.6	32 22 10	
B-4	11.0	UD-2	CH	96.2	2.72			59.8	61 24 37	
B-4	16.0	UD-3	CH	91.2	2.71			80.9	86 29 57	
B-4	0-1.5	SS-1						16.0	NP NP NP	
B-4	2.5-4	SS-2						27.5	NP NP NP	
B-4	7.5-9	SS-3	CL					39.2	48 22 26	
B-4	12-13.5	SS-4	CH					71.5	134 36 98	
B-4	17.5-19	SS-5	CH					80.9	82 23 59	

NOTES: 1. Soil tests in accordance with applicable ASTM Standards
 2. Soil classification in accordance with Unified Soil Classification System
 3. 1 = Triaxial Test
 U = Unconfined Compression Test
 C = Consolidation Test
 P = Proctor Test
 HP = Hand Penetrometer Test
 TV = Torvane Test

PROJECT NAME Craney Island

PROJECT NUMBER NK5-1175C

PROJECT LOCATION Portsmouth, Virginia

LAW ENGINEERING TESTING COMPANY

SOIL DATA SUMMARY



BORING NO.	SAMPLE DEPTH (FEET)	SAMPLE TYPE	SOIL CLASSIFICATION	UNIT WEIGHT Wet pcf Dry	% FINER NO. 200 SIEVE	SPECIFIC GRAVITY	VOID RATIO	NATURAL MOISTURE %	ATTERBERG LIMITS L.L. P.L. P.I.	ADDITIONAL TESTS CONDUCTED (SEE NOTE #3)
------------	---------------------	-------------	---------------------	----------------------------------	-----------------------------	------------------	------------	--------------------	------------------------------------	--

B-4	20-21.5	SS-6	CH					63.8	90	33	57
B-4	23.5-25	SS-7	CL					55.4	39	21	18
B-5	6.0	UD-1	CH	81.0	38.0	2.70		112.9	149	42	107
B-5	11.0	UD-2	CL	117.4		2.66		72.7	48	22	26
B-5	16.0	UD-3	CH	88.5		2.69		69.9	72	29	43
B-5	0-1.5	SS-1	MH					52.0	92	43	49
B-5	7.5-9	SS-3	CL					70.0	43	22	21
B-5	12-13.5	SS-4	CH					77.2	61	27	34
B-5	17-19.5	SS-5	CH					69.9	66	25	41
B-5	20-21.5	SS-6	CH					80.1	99	23	76
B-5	23.5-25	SS-7	MH					116.2	100	43	57
B-6	6.0	UD-1	CH	79.5		2.69		151.9	127	37	90
B-6	11.0	UD-2	CH	83.3		2.67		136.3	116	37	79
B-6	16.0	UD-3	CH	83.2		2.69		121.3	91	31	60
B-6	0-1.5	SS-1	CH			2.75		37.8	72	33	39
B-6	2.5-4	SS-2	CH					119.5	153	47	106
B-6	7.5-9	SS-3	CH					151.9	154	44	110
B-6	12-13.5	SS-4	CH					74.3	96	31	65
B-6	17-18.5	SS-5	CH					128.1	134	38	96
B-6	20-21.5	SS-6	CH					119.6	129	41	88

NOTES: 1. Soil tests in accordance with applicable ASTM Standards
2. Soil classification in accordance with Unified Soil Classification System
3. 1 = Triaxial Test
U = Unconfined Compression Test
C = Consolidation Test
P = Proctor Test

DS = Direct Shear
HP = Hand Penetrometer Test
TV = Torvane Test

PROJECT NAME
PROJECT NUMBER
PROJECT LOCATION

Craney Island

NK5-1175C

Portsmouth, Virginia



LAW ENGINEERING TESTING COMPANY

SOIL DATA SUMMARY

[illegible]

NOTES: 1.

Soil tests in accordance with applicable ASTM Standards

2.

Soil classification in accordance with Unified Soil Classification

3.

T = Triaixial Test

U = Unconfined Compression Test

DS = Direct Shear

HP = Hand Dynamometer Test

TV = Torrance Test

$p = \text{Proctor Test}$

C = Consolidation Test

PROJECT LOCATION

Portsmouth, Virginia

PROJECT NUMBER

NK5-1175C

PROJECT NAME

Crane Island

LABORATORY TESTS

SOIL CLASSIFICATION

Soil classifications provide a general guide to the engineering properties of various soil types and enable the engineer to apply his past experience to current problems. In our investigation, jar samples obtained during drilling operations are examined in our laboratory and visually classified by an engineer. The soils are classified according to consistency (based on number of blows from standard penetration tests), color and texture. These classification descriptions are included on our Test Boring Records.

The classification system discussed above is primarily qualitative and for detailed soil classification two laboratory tests are necessary: grain size tests and plasticity tests. Using these test results the soil can be classified according to the AASHTO or Unified Classification Systems (ASTM D-2487). Each of these classification systems and the in-place physical soil properties provides an index for estimating the soil's behavior. The soil classifications and physical properties obtained are presented on the following sheets.

GRAIN SIZE TESTS

Grain Size Test are performed to determine the soil classification and the grain size distribution. The soil samples are prepared for testing according to ASTM 421 (dry preparation) or ASTM D-2217 (wet preparation). The grain size distribution of soils coarser than a number 200 sieve (0.075 mm opening) is determined by passing the samples through a standard set of nested sieves. Materials passing the number 200 sieve are suspended in water and the grain size distribution calculated from the measured settlement rate. These tests are conducted in accordance with ASTM D-422.

PLASTICITY TEST

Plasticity tests are performed to determine the soil classification and plasticity characteristics. The soil plasticity characteristics are defined by the Plastic Index (PI) and the Liquid Limit (LL). The PI is related to the volume changes which occur in confined soils beneath foundations. The PI and LL are determined in accordance with ASTM D-424 and D-423, respectively.

PHYSICAL SOIL PROPERTIES

The in-place physical properties are described by the specific gravity, wet unit weight, moisture content, dry unit weight, void ratio, and percent saturation of the soil. The specific gravity and moisture content are determined according to ASTM D-854 and D-2216, respectively. The wet unit weight is found by obtaining a known volume of the soil and dividing the wet sample weight by the known volume. The dry unit weight, void ratio and percent saturation are calculated values.

TESTING PROCEDURE LD-2435
ONE DIMENSIONAL CONSOLIDATION PROPERTIES OF SOILS

REFERENCES:

ASTM Specification D-2435-70, "Standard Method of Test for One-Dimensional Consolidation Properties of Soils".

ASTM Specification D-2716-71, "Laboratory Determination of Moisture Content of Soil".

ASTM Specification D-854-58, "Standard Method of Test for Specific Gravity of Soils".

T. W. Lambe, Soil Testing for Engineers, John Wiley and Sons, Inc., 1962, Chapter IX, "Consolidation Test".

PURPOSE AND
SCOPE:

This test procedure covers the determination of the magnitude and rate of consolidation of soil when it is restrained laterally and loaded and drained axially. The values can be evaluated to determine magnitudes and rates of settlements beneath foundations or other engineered structures.

EQUIPMENT:

Loading Devices with consolidometers, balances, trimmers and assorted apparatus as described in ASTM Specification D-2435, including either Wykeham Farrance or Anteus Loading Systems.

PROCEDURES:

The sample, usually an undisturbed sampled encased in a steel tube, is carefully removed from its protective cover and the soil constants, including unit weight, moisture content and specific gravity are determined as stated in the referenced specifications.

A single section of the specimen is then trimmed into a disc, 2.4 inches in diameter and 1 inch thick. The disc is confined with a stainless steel ring and sandwiched between porous plates. The sample may then be flowed to the desired percent saturation and loaded incrementally. The deformations for each load increment are measured and the percent consolidation and coefficients of consolidation are then computed.

REPORT:

The test results are depicted on the attached "Consolidation Test Sheet" as load versus percent strain, with a second graph depicting the coefficient of consolidation and percent initial consolidation versus load.

TESTING PROCEDURE LD-2850 (2)
UNCONSOLIDATED-UNDRAINED TRIAXIAL SHEAR TEST OF SOILS

REFERENCES:

ASTM Specification D-2850-70

T. W. Lambe, Soil Testing for Engineers, John Wiley and Sons, Inc., 1962, New York, New York.

EQUIPMENT:

The equipment used to perform the Unconsolidated-Undrained triaxial shear test includes: triaxial machine including a triaxial cell, specimen trimmer with accessories, membranes, balances, drying oven, moisture content cans, rubber strips for binding, air reservoir and regulator, gauges, calibrated burette and electrical pressure transducer.

PROCEDURE:

Triaxial shear tests are performed on several sections of a relatively undisturbed sample of soil that have been extruded from the sample tube.

The specimens are trimmed into cylinder 1.4 inches in diameter and approximately 3 inches high, and encased in rubber membranes. Each specimen is then placed in the compression chamber and confined by an all-around air pressure. Drainage is then prohibited and the sample is loaded axially until a shear failure is reached or until the total axial strain is at least 20%, whichever occurs first. Stress versus strain curves and a Mohr rupture envelope are plotted for each sample.

REPORT:

The sample identification, stress versus strain curves, Mohr circles and rupture envelope, unit weights (wet and dry), moisture content and void ratio are included on the Triaxial Shear Test Sheets.

In addition, the shear strength parameters (cohesion and angle of shear resistance) are listed.

CONSOLIDATION TEST

COMPRESSION INDEX 1.896

SWELLING INDEX .085

MAXIMUM PRECONSOLIDATION STRESS $\text{ksf} \cdot 12 - .15$

INITIAL VOID RATIO 4.333

INITIAL WATER CONTENT 161.45

INITIAL SATURATION 100.60

SAMPLE IDENTIFICATION

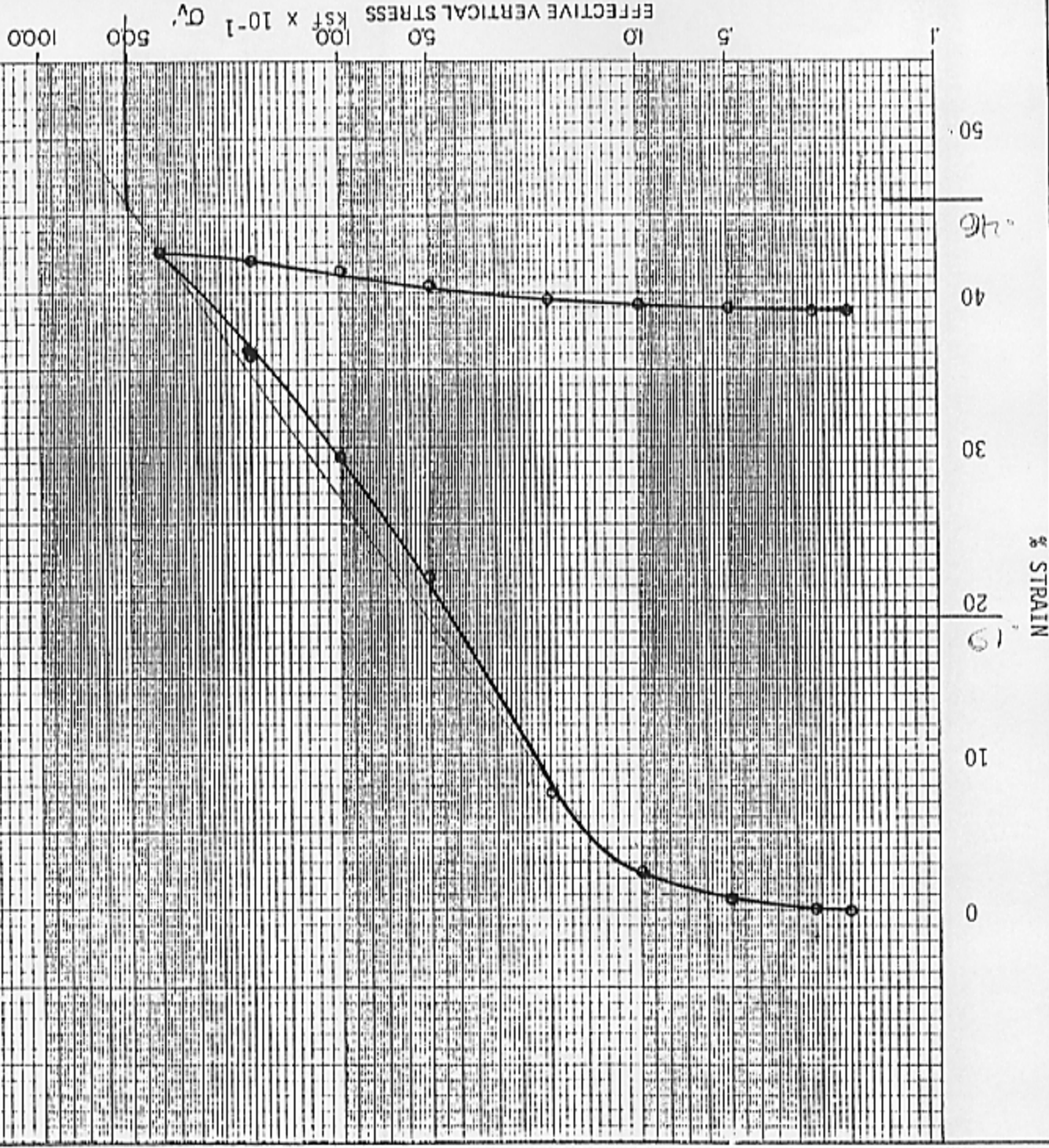
CORE NUMBER B-1 UD-1

DEPTH 6 Feet

CLASSIFICATION Dark Gray Soft CLAY (CH)

NK5-1175C

27



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NK5-1175C
BORING NUMBER IS B-1 UD-1
SAMPLE IDENTIFICATION IS DARK GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 82.60
WET SAMPLE WT (GM) = 79.86 INITIAL WATER CONTENT (%) = 161.45
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 100.60
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 4.3331

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.3747	.3737	.3734	1.75	.7486	21	11
.026	.3729	.3722	.3722	3.50	.7474	39	-6
.05	.3706	.3677	.3672	2.75	.7424	33	3
.1	.3667	.3568	.3434	2.75	.7186	4	51
.2	.3306	.3062	.3062	7.75	.6814	32	-7
.5	.2870	.2088	.1894	7.75	.5646	18	9
1.0	.1653	.1386	.1199	5.50	.4951	44	22
2.0	.1098	.0732	.0660	5.50	.4412	19	5
4.0	.0604	.0184	.0000	4.50	.3752	10	20
2.0	.0003	.0045	.0051	2.25	.3803	6	2
1.0	.0065	.0091	.0100	2.20	.3852	32	12
.5	.0104	.0142	.0178	1.50	.3930	8	40
.2	.0238	.0274	.0275	3.75	.4027	59	-3
.1	.0282	.0290	.0343	1.00	.4095	44	76
.05	.0351	.0358	.0363	1.50	.4115	50	21
.026	.0372	.0381	.0391	.75	.4143	47	32
.02	.0393	.0399	.0403	1.50	.4155	23	27

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7486	.00	4.323	*	.0	.34	.60E-02	.28E+00	.080
.026	.7473	.17	4.314	*	.0	.43	.72E-02	.27E+00	.121
.05	.7425	.81	4.280	*	.0	.41	.80E-02	.31E+00	.272
.1	.7310	2.35	4.198	*	.1	.13	.46E-02	.53E+00	.943
.2	.6911	7.68	3.914	*	.2	.10	.33E-02	.47E+00	.896
.5	.5850	21.85	3.160	*	.4	.11	.13E-02	.14E+00	.270
1.0	.5312	29.04	2.777	*	.8	.09	.57E-03	.68E-01	.199
2.0	.4805	35.82	2.416	*	1.5	.09	.32E-03	.35E-01	.235
4.0	.4282	42.80	2.045	*	3.0	.18	.63E-04	.33E-02	.117
2.0	.4332	42.14	2.080	*	3.0	.18	.11E-03	.57E-02	.101
1.0	.4374	41.56	2.111	*	1.5	.28	.36E-03	.12E-01	.109
.5	.4421	40.95	2.143	*	.8	.12	.54E-03	.45E-01	.179
.2	.4521	39.61	2.215	*	.4	.44	.95E-03	.21E-01	.038
.1	.4537	39.40	2.226	*	.2	.29	.13E-02	.42E-01	.037
.05	.4552	39.19	2.237	*	.1	.59	.64E-02	.11E+00	.048
.026	.4571	38.93	2.251	*	.0	.30	.58E-02	.19E+00	.054
.02	.4580	38.82	2.257	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX .706

SWELLING INDEX .086

MAXIMUM PRECONSOLIDATION STRESS $k_{sf} .08 = .10$

INITIAL VOID RATIO 3.6771

INITIAL WATER CONTENT 145.34

INITIAL SATURATION 106.72

SAMPLE IDENTIFICATION

CORE NUMBER B-1 UD-2

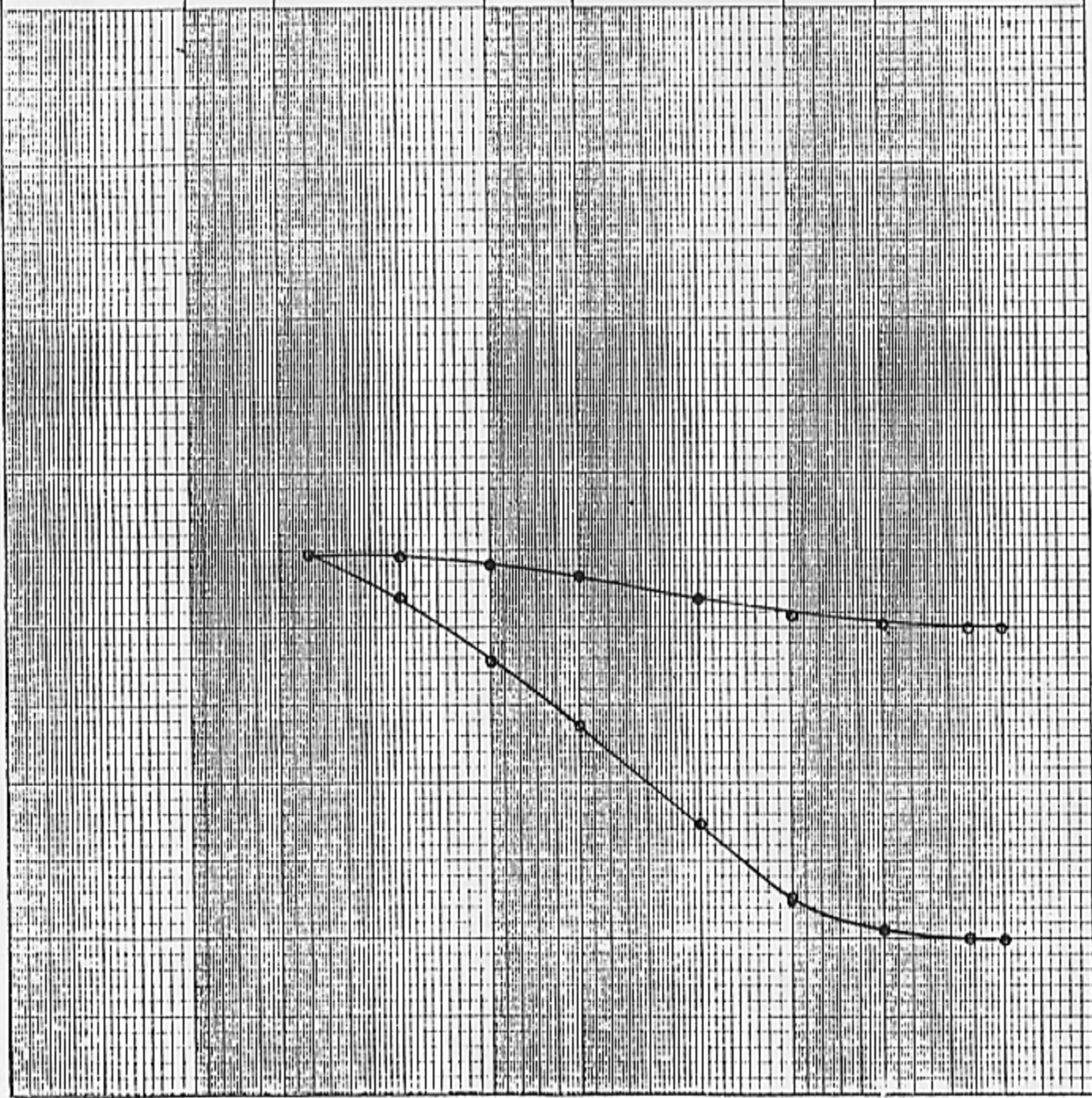
DEPTH 11.5 Feet

CLASSIFICATION Gray Soft CLAY (CH)

NK5-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $k_{sf} \times 10^{-1}$



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-1 UD-2
SAMPLE IDENTIFICATION IS GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 88.38
WET SAMPLE WT (GM) = 85.45 INITIAL WATER CONTENT (%) = 145.34
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 106.72
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 3.6771

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2499	.2494	.2493	1.50	.7493	15	6
.026	.2493	.2489	.2485	1.50	.7485	0	44
.05	.2470	.2452	.2451	3.25	.7451	42	-2
.1	.2315	.2295	.2289	2.00	.7289	85	2
.2	.2289	.1965	.1906	7.50	.6906	0	6
.5	.1885	.1492	.1356	5.00	.6356	4	16
1.0	.1315	.1090	.1042	4.80	.6042	14	7
2.0	.1020	.0733	.0641	4.00	.5641	6	14
4.0	.0625	.0450	.0365	3.00	.5365	7	23
2.0	.0365	.0381	.0385	1.50	.5385	0	11
1.0	.0386	.0425	.0432	2.00	.5432	2	5
.5	.0435	.0482	.0484	2.60	.5484	5	-6
.2	.0491	.0579	.0589	4.50	.5589	6	0
.1	.0591	.0655	.0659	7.00	.5659	2	-4
.05	.0697	.0704	.0705	3.60	.5705	83	0
.026	.0707	.0713	.0715	3.00	.5715	23	13
.02	.0715	.0718	.0720	2.00	.5720	0	33

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	% RATIO	VOID RATIO	*AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.02	.7493	.00	3.673	*	.0	.79	.49E-02	.99E-01	.024
.026	.7489	.06	3.670	*	.0	.36	.44E-02	.19E+00	.077
.05	.7454	.53	3.648	*	.0	.56	.15E-01	.42E+00	.328
.1	.7296	2.64	3.550	*	.1	.14	.43E-02	.48E+00	.746
.2	.6936	7.44	3.325	*	.2	.18	.26E-02	.20E+00	.717
.5	.6478	13.55	3.040	*	.4	.17	.98E-03	.78E-01	.603
1.0	.6187	17.43	2.858	*	.8	.18	.65E-03	.45E-01	.706
2.0	.5846	21.98	2.646	*	1.5	.23	.26E-03	.14E-01	.436
4.0	.5636	24.79	2.515	*	3.0	.45	.44E-04	.12E-02	.037
2.0	.5654	24.55	2.526	*	3.0	.34	.17E-03	.59E-02	.092
1.0	.5698	23.96	2.553	*	1.5	.27	.32E-03	.15E-01	.114
.5	.5753	23.22	2.588	*	.8	.16	.60E-03	.47E-01	.164
.2	.5858	21.83	2.653	*	.4	.11	.82E-03	.98E-01	.151
.1	.5931	20.85	2.699	*	.2	.21	.20E-02	.12E+00	.095
.05	.5977	20.24	2.727	*	.1	.25	.95E-03	.48E-01	.019
.026	.5985	20.12	2.733	*	.0	.38	.22E-02	.74E-01	.018
.02	.5989	20.08	2.735	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX 1.17

SWELLING INDEX .056

MAXIMUM PRECONSOLIDATION STRESS $kst .17 - .20$

INITIAL VOID RATIO 2.75

INITIAL WATER CONTENT 93.32

INITIAL SATURATION 91.60

SAMPLE IDENTIFICATION

CORE NUMBER B-1 UD-3

DEPTH 16.0 Feet

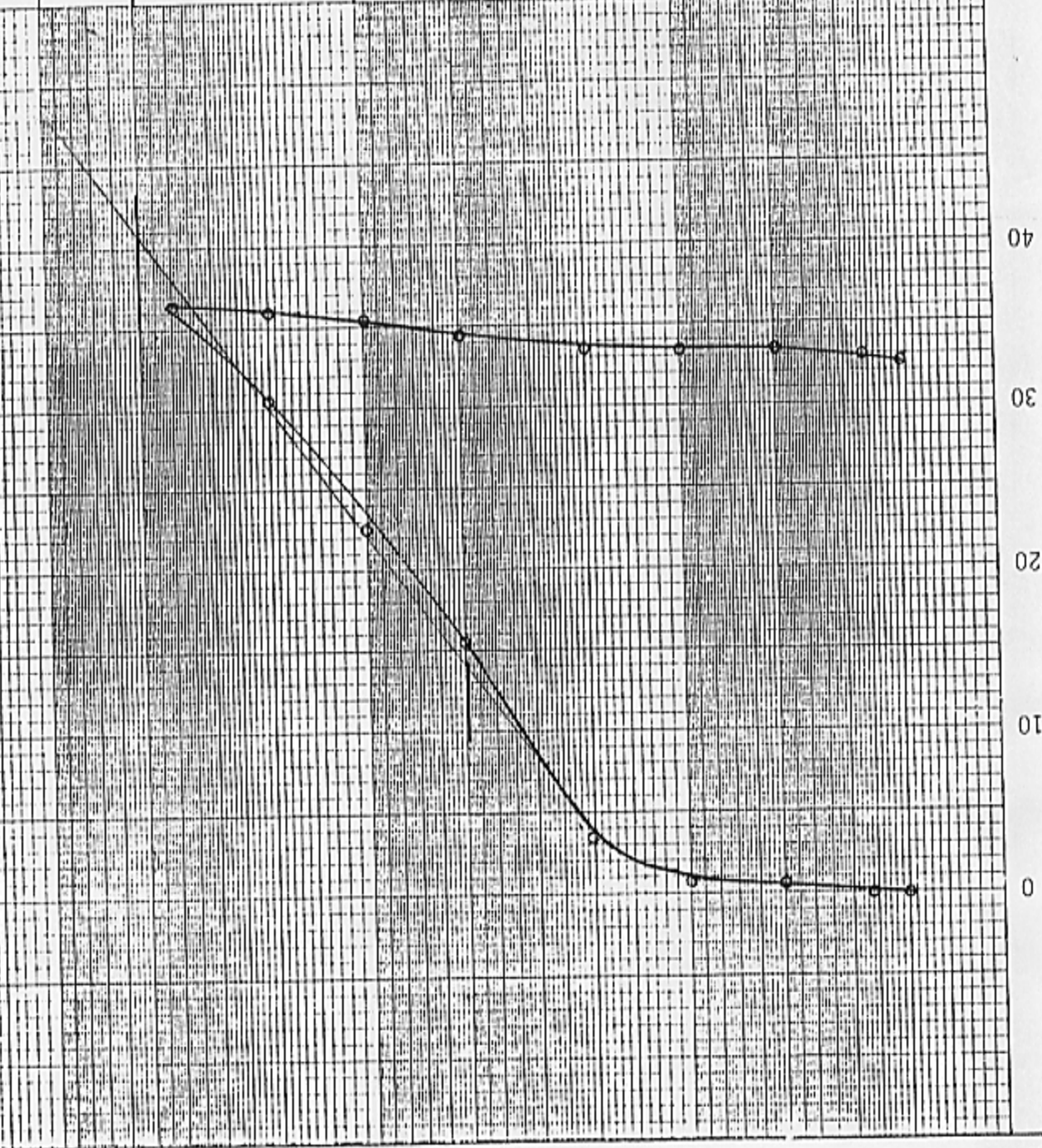
CLASSIFICATION Dark Gray Soft CLAY (CH)

NK5-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $kst \times 10^{-1} Q_v$

LAW ENGINEERING



CONSOLIDATION TEST

COMPRESSION INDEX 1.17

SWELLING INDEX .026

MAXIMUM RECONSOLIDATION STRESS $Ks1.17 - .50$

INITIAL VOID RATIO 2.75

INITIAL WATER CONTENT 98.35

INITIAL SATURATION 91.80

SAMPLE IDENTIFICATION

CORE NUMBER 8-1 UD-3

DEPTH 16.0 Feet

CLASSIFICATION Dark Gray

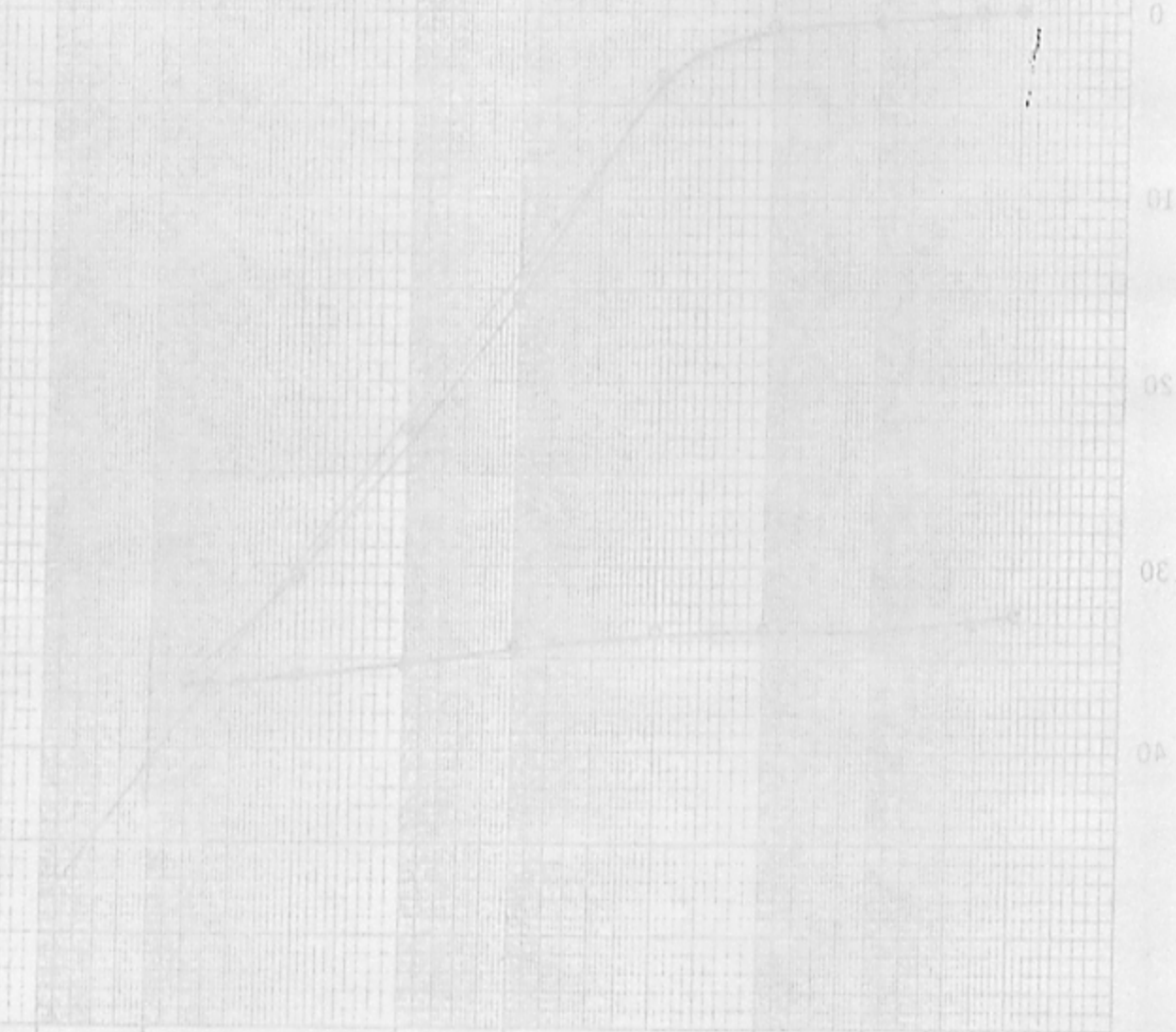
Soft CLAY (CH)

MS-1175C

MINUTE 2

EFFECTIVE VERTICAL STRESS $Ks1.17 \times 10^{-1}$ Q_v

— LAW ENGINEERING —



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-1 UD-3
SAMPLE IDENTIFICATION IS DARK GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 86.84
WET SAMPLE WT (GM) = 83.96 INITIAL WATER CONTENT (%) = 93.32
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 91.60
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 2.7508

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.3215	.3208	.3206	2.00	.7482	56	6
.026	.3206	.3201	.3200	4.50	.7476	0	7
.05	.3199	.3183	.3173	4.75	.7449	5	30
.1	.3159	.3131	.3107	4.00	.7383	31	31
.2	.3077	.2937	.2835	6.50	.7111	16	31
.5	.2697	.1981	.1811	9.75	.6087	14	8
1.0	.1686	.1325	.1280	8.00	.5556	23	0
2.0	.1131	.0746	.0622	6.75	.4898	25	12
4.0	.0471	.0226	.0000	5.25	.4276	35	31
2.0	.0001	.0019	.0022	1.75	.4298	4	4
1.0	.0026	.0056	.0070	2.00	.4346	10	22
.5	.0071	.0121	.0154	4.00	.4430	1	32
.2	.0157	.0208	.0226	6.50	.4502	5	17
.1	.0256	.0260	.0261	1.50	.4537	87	1
.05	.0261	.0278	.0284	4.00	.4560	0	17
.026	.0296	.0300	.0301	2.00	.4577	72	3
.02	.0313	.0315	.0316	1.25	.4592	84	5

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY.

STRESS KSF	SAMPLE HT	STRAIN %	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7482	.00	2.742	*	.26	.20E-02	.12E+00	.024
.026	.7477	.07	2.739	*	.25	.16E-02	.10E+00	.033
.05	.7458	.33	2.730	*	.29	.22E-02	.12E+00	.075
.1	.7413	.93	2.707	*	.17	.27E-02	.25E+00	.308
.2	.7227	3.41	2.614	*	.09	.25E-02	.42E+00	.173
.5	.6294	15.89	2.148	*	.09	.97E-03	.14E+00	.874
1.0	.5768	22.92	1.884	*	.09	.57E-03	.77E-01	.958
2.0	.5191	30.63	1.596	*	.09	.25E-03	.28E-01	.703
4.0	.4768	36.28	1.384	*	.28	.38E-04	.14E-02	.035
2.0	.4789	36.00	1.395	*	.25	.12E-03	.50E-02	.062
1.0	.4826	35.50	1.413	*	.13	.18E-03	.15E-01	.094
.5	.4882	34.75	1.442	*	.08	.20E-03	.27E-01	.075
.2	.4942	33.95	1.472	*	.35	.15E-02	.46E-01	.057
.1	.4977	33.49	1.489	*	.13	.62E-03	.50E-01	.031
.05	.4995	33.24	1.498	*	.27	.23E-02	.92E-01	.029
.026	.5012	33.02	1.506	*	.43	.13E-01	.32E+00	.062
.02	.5026	32.83	1.514	*	.0			

CONSOLIDATION TEST

COMPRESSION INDEX 1.089

SWELLING INDEX .079

MAXIMUM PRECONSOLIDATION STRESS $\text{ksf} \cdot 23 - .28$

INITIAL VOID RATIO 2.927

INITIAL WATER CONTENT 107.07

INITIAL SATURATION 98.76

SAMPLE IDENTIFICATION

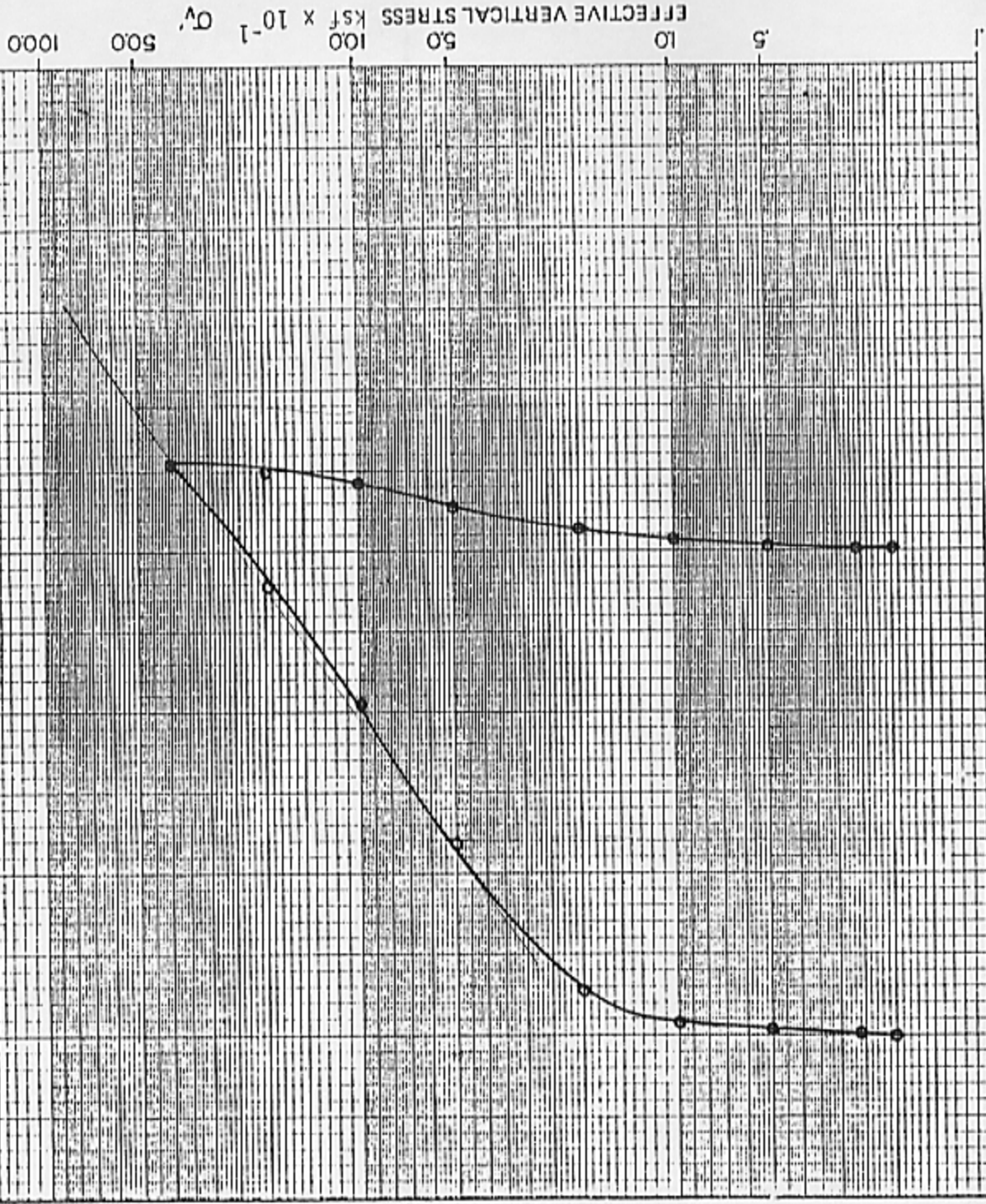
CORE NUMBER B-1 UD-4

DEPTH 21 Feet

CLASSIFICATION Dark Gray Soft CLAY (CH)

NK5-1175C

% STRAIN



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NK5-1175C
BORING NUMBER IS B-1 UD-4
SAMPLE IDENTIFICATION IS DARK GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 88.83
WET SAMPLE WT (GM) = 85.89 INITIAL WATER CONTENT (%) = 107.07
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 98.76
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 2.9273

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2808	.2805	.2803	.80	.7463	91	4
.026	.2802	.2798	.2797	2.00	.7457	18	9
.05	.2796	.2791	.2779	1.00	.7439	15	63
.1	.2761	.2724	.2722	3.60	.7382	30	-3
.2	.2720	.2587	.2573	4.00	.7233	1	0
.5	.2572	.1960	.1950	7.50	.6610	0	-9
1.0	.1942	.1386	.1260	5.50	.5920	1	9
2.0	.1165	.0757	.0690	4.00	.5350	17	3
4.0	.0669	.0189	.0000	5.00	.4660	3	19
2.0	.0001	.0024	.0033	1.50	.4693	3	19
1.0	.0035	.0082	.0090	3.12	.4750	3	4
.5	.0093	.0179	.0187	6.30	.4847	3	-1
.2	.0200	.0290	.0311	7.75	.4971	11	8
.1	.0351	.0353	.0354	1.50	.5014	94	1
.05	.0355	.0384	.0387	4.50	.5047	3	0
.026	.0389	.0393	.0408	1.00	.5068	31	69
.02	.0411	.0415	.0420	1.00	.5080	40	37

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT IN	STRAIN %	VOID RATIO	*AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.02	.7463	.00	2.908	*	.59	.45E-02	.12E+00	.025
.026	.7457	.07	2.905	*	1.18	.27E-02	.37E-01	.012
.05	.7451	.16	2.901	*	.32	.32E-02	.16E+00	.103
.1	.7392	.95	2.871	*	.28	.36E-02	.20E+00	.261
.2	.7242	2.96	2.792	*	.12	.25E-02	.30E+00	.896
.5	.6561	12.09	2.435	*	.14	.17E-02	.17E+00	.089
1.0	.5935	20.47	2.108	*	.15	.95E-03	.73E-01	.954
2.0	.5387	27.82	1.821	*	.10	.34E-03	.37E-01	.964
4.0	.4832	35.25	1.530	*	.33	.57E-04	.18E-02	.046
2.0	.4859	34.89	1.544	*	.16	.11E-03	.73E-02	.094
1.0	.4913	34.16	1.573	*	.08	.21E-03	.26E-01	.171
.5	.5012	32.84	1.624	*	.07	.33E-03	.50E-01	.149
.2	.5125	31.33	1.683	*	.38	.19E-02	.57E-01	.073
.1	.5167	30.76	1.706	*	.13	.10E-02	.89E-01	.058
.05	.5200	30.32	1.723	*	.57	.19E-02	.36E-01	.012
.026	.5207	30.23	1.726	*	.58	.86E-02	.17E+00	.034
.02	.5214	30.13	1.730	*				

CONSOLIDATION TEST

COMPRESSION INDEX 2.467

SWELLING INDEX .083

MAXIMUM PRECONSOLIDATION STRESS ksf .25 - .30

INITIAL VOID RATIO 4.369

INITIAL WATER CONTENT 155.58

INITIAL SATURATION 96.14

SAMPLE IDENTIFICATION

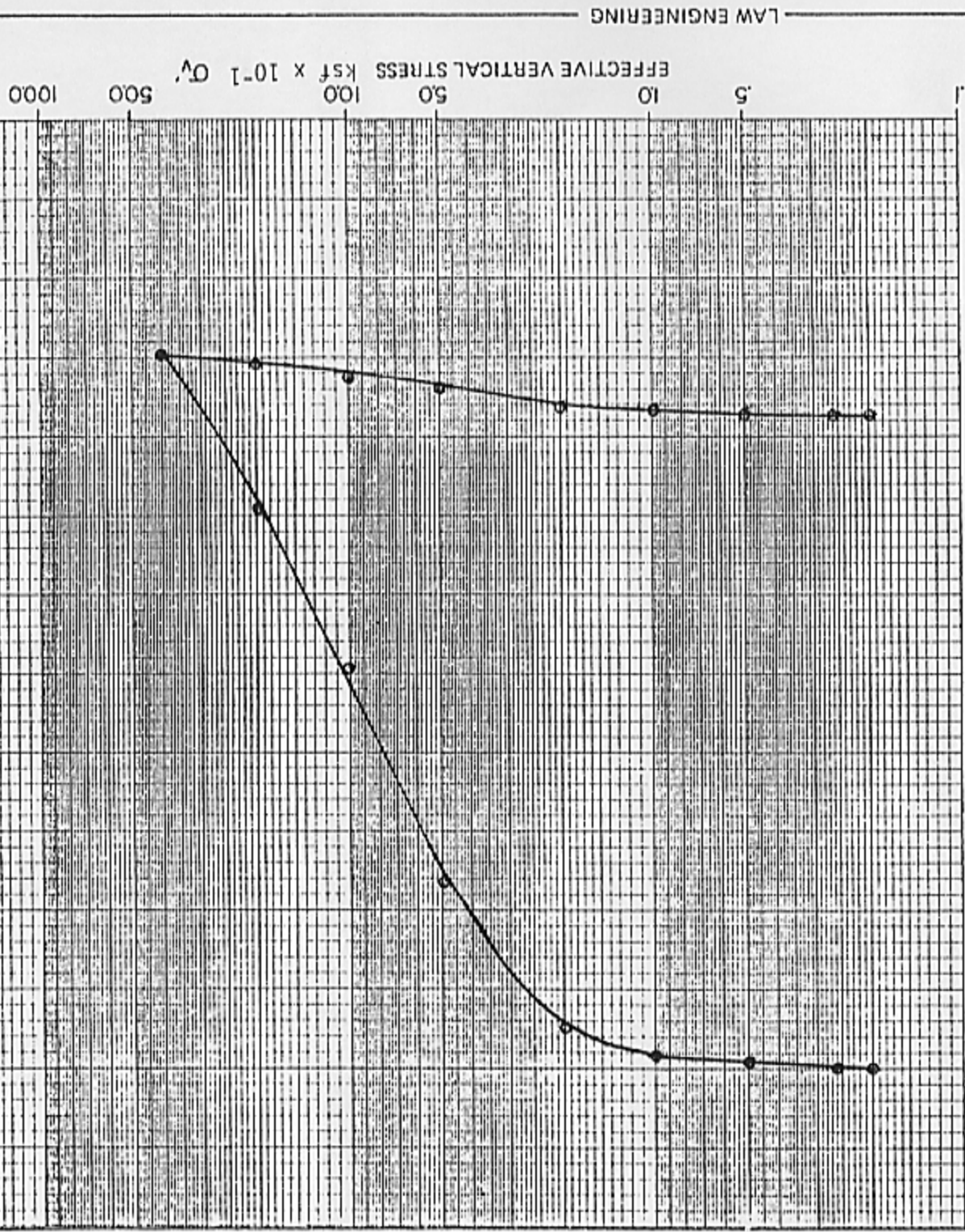
CORE NUMBER B-2 UD-1

DEPTH 11 Feet

CLASSIFICATION Black Soft CLAY (CH)

NK5-1175C

% STRAIN



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-2 UD-1
SAMPLE IDENTIFICATION IS BLACK SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 80.20
WET SAMPLE WT (GM) = 77.54 INITIAL WATER CONTENT (%) = 155.58
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 96.14
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 4.3693

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.3461	.3455	.3454	1.50	.7490	31	3
.026	.3454	.3451	.3450	1.25	.7486	0	16
.05	.3441	.3433	.3431	1.50	.7467	50	5
.1	.3429	.3396	.3389	2.00	.7425	5	7
.2	.3380	.3288	.3248	2.80	.7284	8	21
.5	.3244	.2628	.2588	7.75	.6624	0	-4
1.0	.2484	.1644	.1597	6.30	.5633	10	-4
2.0	.1485	.0915	.0913	5.25	.4949	15	-8
4.0	.0854	.0244	.0000	5.25	.4036	8	19
2.0	.0005	.0034	.0044	1.50	.4080	13	15
1.0	.0050	.0105	.0116	2.75	.4152	8	6
.5	.0152	.0164	.0182	1.00	.4218	72	25
.2	.0186	.0258	.0269	4.75	.4305	4	3
.1	.0275	.0280	.0332	.75	.4368	51	81
.05	.0343	.0345	.0370	.75	.4406	83	65
.026	.0380	.0384	.0403	1.00	.4439	69	56
.02	.0405	.0411	.0423	2.00	.4459	23	56

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN %	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT ² /KIP	CC
.02	.7490	.00	4.352	*	.95	.44E-02	.74E-01	.021
.026	.7487	.04	4.350	*	.79	.49E-02	.10E+00	.045
.05	.7469	.28	4.347	*	.59	.38E-02	.10E+00	.092
.1	.7430	.80	4.320	*	.41	.38E-02	.15E+00	.265
.2	.7319	2.28	4.240	*	.12	.25E-02	.31E+00	.239
.5	.6631	11.48	3.747	*	.11	.23E-02	.28E+00	.467
1.0	.5593	25.32	3.004	*	.10	.87E-03	.10E+00	.773
2.0	.4848	35.28	2.471	*	.07	.36E-03	.49E-01	.752
4.0	.4111	45.11	1.943	*	.24	.68E-04	.25E-02	.089
2.0	.4149	44.61	1.970	*	.14	.14E-03	.90E-02	.160
1.0	.4216	43.72	2.018	*	.39	.56E-03	.13E-01	.117
.5	.4265	43.06	2.053	*	.08	.34E-03	.37E-01	.151
.2	.4349	41.94	2.114	*	.54	.89E-03	.15E-01	.027
.1	.4361	41.78	2.122	*	.54	.20E-02	.35E-01	.031
.05	.4374	41.61	2.131	*	.41	.35E-02	.80E-01	.036
.026	.4388	41.41	2.142	*	.20	.42E-02	.19E+00	.054
.02	.4397	41.30	2.148	*	.0			

CONSOLIDATION TEST

COMPRESSION INDEX 1.992

SWELLING INDEX 0.28

MAXIMUM PRECONSOLIDATION STRESS 0.39 Ksf

INITIAL VOID RATIO 4.431

INITIAL WATER CONTENT 153.7%

INITIAL SATURATION 93.2%

SAMPLE IDENTIFICATION

Boring Number B-2 UD-2

DEPTH 16.7 ft.

CLASSIFICATION Soft Dark

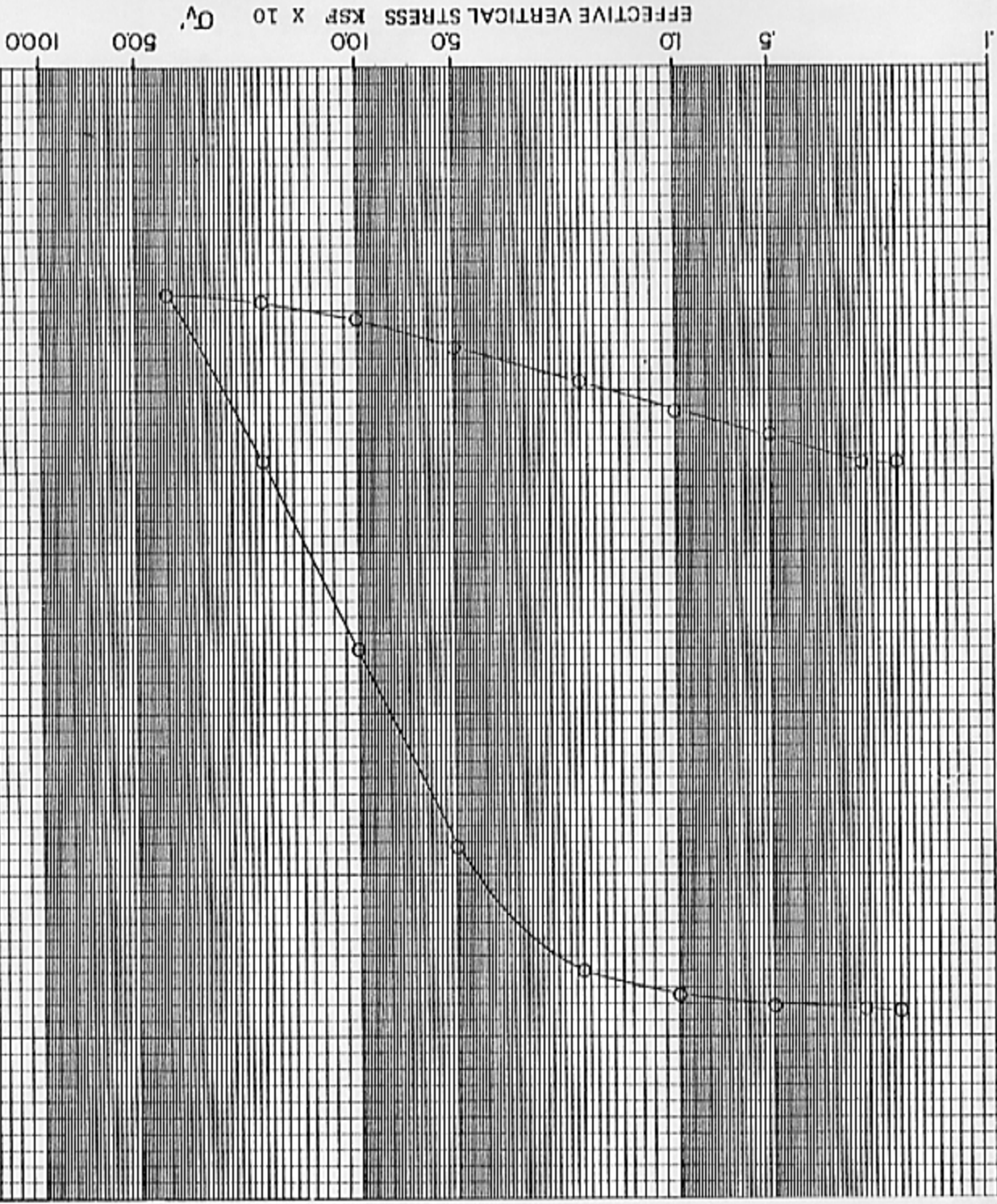
Gray Clay, Trace Fine

Sand and Voids (CH)

NKS-1175

Crane Island

VOID RATIO



CAV ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME : HQ ARE HK5-1175 CRANEY ISLAND
BORING NUMBER IS UD-2 @ 16.7 FT
SAMPLE IDENTIFICATION IS SOFT DARK GRAY CLAY. TRACE FINE SAND & VOIDS

SPECIFIC GRAVITY = 2.69
INITIAL WET UNIT WT (PCF) = 78.4
NET SAMPLE WT (GM) = 101.01
INITIAL WATER CONTENT (%) = 153.7
VOL OF SAMPLE (CC) = 90.44
INITIAL SATURATION (%) = 93.2
DIA OF SAMPLE (IN) = 2.50
INITIAL VOID RATIO = 4.431
SAMPLE THICKNESS (IN) = 9.99

SAMPLE INUNDATED AT 0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE NT AT DEND	% INT	% SEC
0	2690	2690	2690	1.00	9990	**	0
0.1	2698	2698	2690	1.00	9980	**	0
0.2	2710	2719	2720	1.00	9960	54	0
0.5	2763	2780	2785	70	9895	69	4
1.0	2833	2802	2923	3.10	9757	38	9
2.0	2836	3470	3624	3.10	9056	18	15
5.0	3650	4618	4760	46.20	7920	3	3
10.0	4720	5670	5832	45.00	6848	2	3
20.0	5870	6620	6783	40.10	5897	4	8
30.0	6772	6746	6739	5.00	5941	27	9
40.0	6777	6653	6635	12.00	6945	12	9
50.0	6518	6501	6479	32.00	6201	11	5
60.0	6478	6297	6275	74.00	6405	0	0
70.0	6270	6135	6120	120.00	6560	3	0
80.0	6100	5983	5970	240.00	6710	13	0
90.0	5950	5825	5810	240.00	6870	6	0
100.0	5805	5762	5757	282.00	6923	9	0

STRESS KSF	STRAIN %	VOID RATIO	AVG STRESS FT ² /DAY	CV FT ² /DAY	95RM FT/DAY	HV FT/KIP	CC
0	00	4.426	0	2.1	1.0E-2	1.3E-1	038
0.1	08	4.421	0	2.1	1.2E-2	9.2E-2	042
0.2	20	4.409	0	3.0	2.4E-2	1.3E-1	117
0.5	95	4.374	2	7	3.7E-3	1.4E-1	249
1.0	2.33	4.299	2	6	9.0E-3	2.3E-1	957
2.0	5.35	3.918	8	0	5.0E-4	2.3E-1	2.050
5.0	20.72	3.301	1.5	0	2.1E-4	1.1E-1	1.934
10.0	41.45	2.719	3.0	0	9.0E-5	4.8E-2	1.716
20.0	40.97	2.203	3.0	1	3.5E-5	2.2E-2	079
30.0	40.33	2.227	3.0	1	6.9E-5	1.0E-2	188
40.0	39.49	2.283	1.5	0	8.0E-5	3.1E-2	281
50.0	37.53	2.368	8	0	7.9E-5	6.8E-2	278
60.0	35.89	2.479	4	0	7.9E-5	6.8E-2	278
70.0	34.33	2.553	2	0	1.1E-4	1.4E-1	280
80.0	32.83	2.644	1	0	1.1E-4	1.4E-1	271
90.0	31.23	2.731	0	0	2.2E-4	4.7E-1	306
100.0	30.70	2.760	0	0	2.9E-4	8.8E-1	253

CONSOLIDATION TEST

COMPRESSION INDEX 1.131

SWELLING INDEX .103

MAXIMUM PRECONSOLIDATION STRESS $\text{ksf} = .27$

INITIAL VOID RATIO 3.719

INITIAL WATER CONTENT 140.75

INITIAL SATURATION 102.17

SAMPLE IDENTIFICATION

CORE NUMBER B-3 UD-1

DEPTH 6 feet

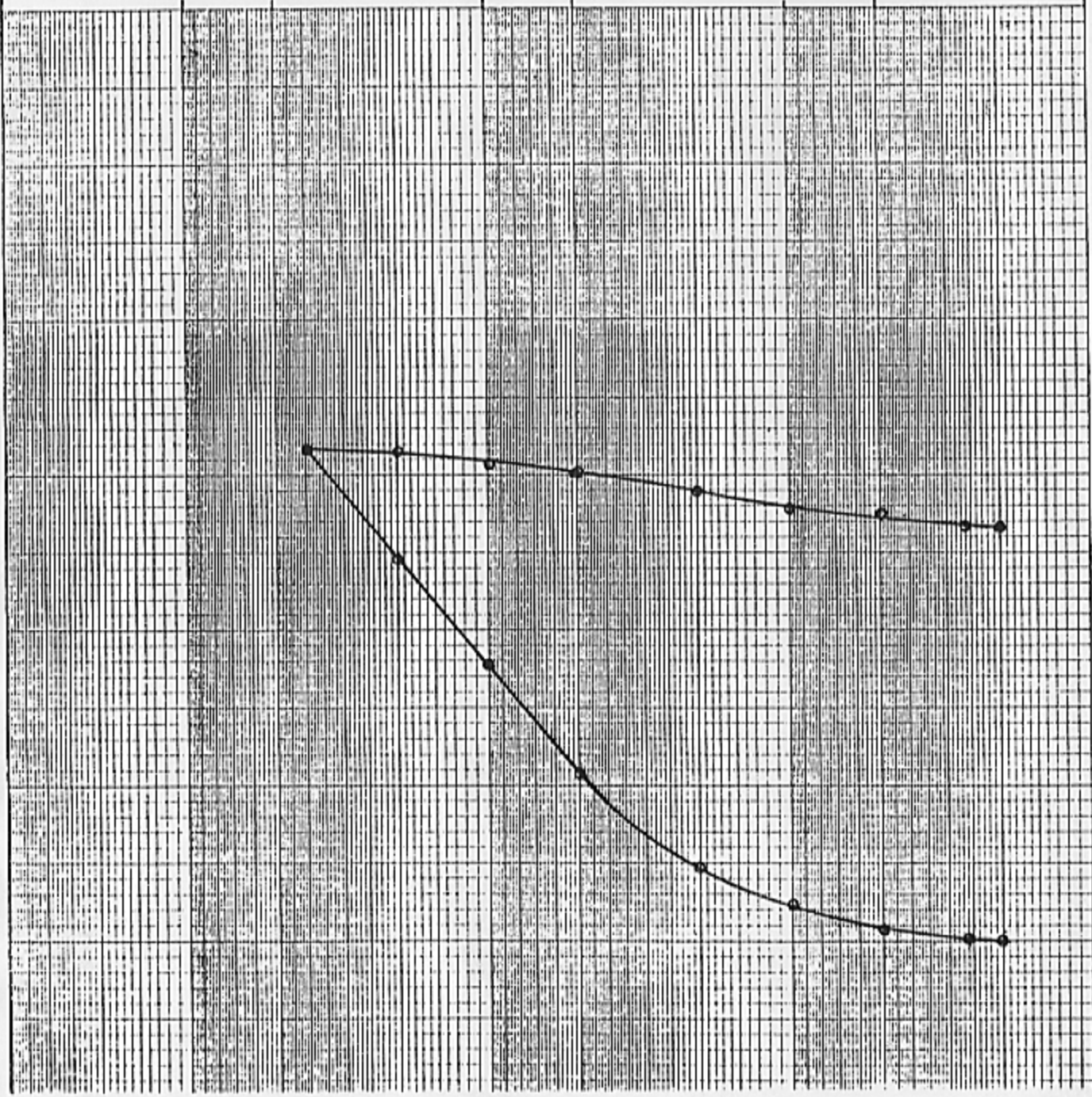
CLASSIFICATION* Gray Soft CLAY (CH)

NKS-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $\text{ksf} \times 10^{-1} \text{ CV}$

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-3 UD-1
SAMPLE IDENTIFICATION IS GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 85.95
WET SAMPLE WT (GM) = 83.10 INITIAL WATER CONTENT (%) = 140.75
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 102.17
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 3.7194

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2839	.2794	.2780	8.60	.7437	20	12
.026	.2780	.2772	.2763	.80	.7420	0	47
.05	.2761	.2726	.2711	9.50	.7368	4	21
.1	.2711	.2613	.2593	8.25	.7250	0	7
.2	.2552	.2415	.2375	8.40	.7032	21	11
.5	.2364	.1984	.1932	7.75	.6589	2	2
1.0	.1835	.1436	.1326	9.00	.5983	17	10
2.0	.1264	.0872	.0818	8.00	.5475	12	2
4.0	.0796	.0329	.0000	5.50	.4657	4	33
2.0	.0002	.0023	.0030	1.50	.4687	7	15
1.0	.0034	.0087	.0109	4.00	.4766	6	20
.5	.0139	.0153	.0166	2.00	.4823	65	20
.2	.0168	.0234	.0249	7.75	.4906	2	9
.1	.0305	.0328	.0351	6.50	.5008	68	20
.05	.0355	.0380	.0387	8.75	.5044	12	11
.026	.0432	.0440	.0446	5.50	.5103	83	8
.02	.0457	.0458	.0459	2.75	.5116	90	6

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.02	.7437	.00	3.680	*	.0	1.46	.18E-01	.20E+00	.049
.026	.7428	.12	3.674	*	.0	.12	.17E-02	.23E+00	.091
.05	.7387	.67	3.648	*	.0	.14	.25E-02	.29E+00	.228
.1	.7278	2.13	3.580	*	.1	.13	.21E-02	.26E+00	.404
.2	.7085	4.73	3.458	*	.2	.12	.16E-02	.19E+00	.685
.5	.6652	10.56	3.186	*	.4	.09	.94E-03	.15E+00	.129
1.0	.6112	17.82	2.846	*	.8	.08	.45E-03	.67E-01	.040
2.0	.5614	24.51	2.533	*	1.5	.10	.32E-03	.36E-01	.131
4.0	.5073	31.79	2.192	*	3.0	.37	.57E-04	.17E-02	.053
2.0	.5098	31.44	2.208	*	3.0	.14	.11E-03	.85E-02	.131
1.0	.5161	30.60	2.248	*	1.5	.29	.31E-03	.12E-01	.095
.5	.5207	29.99	2.276	*	.8	.08	.23E-03	.34E-01	.119
.2	.5282	28.97	2.324	*	.4	.09	.90E-03	.11E+00	.170
.1	.5364	27.88	2.375	*	.2	.07	.52E-03	.85E-01	.066
.05	.5396	27.45	2.395	*	.1	.11	.30E-02	.30E+00	.119
.026	.5449	26.73	2.429	*	.0	.23	.53E-02	.27E+00	.067
.02	.5462	26.56	2.437	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX 1.471

SWELLING INDEX .103

MAXIMUM PRECONSOLIDATION STRESS ksf .30 - .35

INITIAL VOID RATIO 2.816

INITIAL WATER CONTENT 95.47

INITIAL SATURATION 91.53

SAMPLE IDENTIFICATION

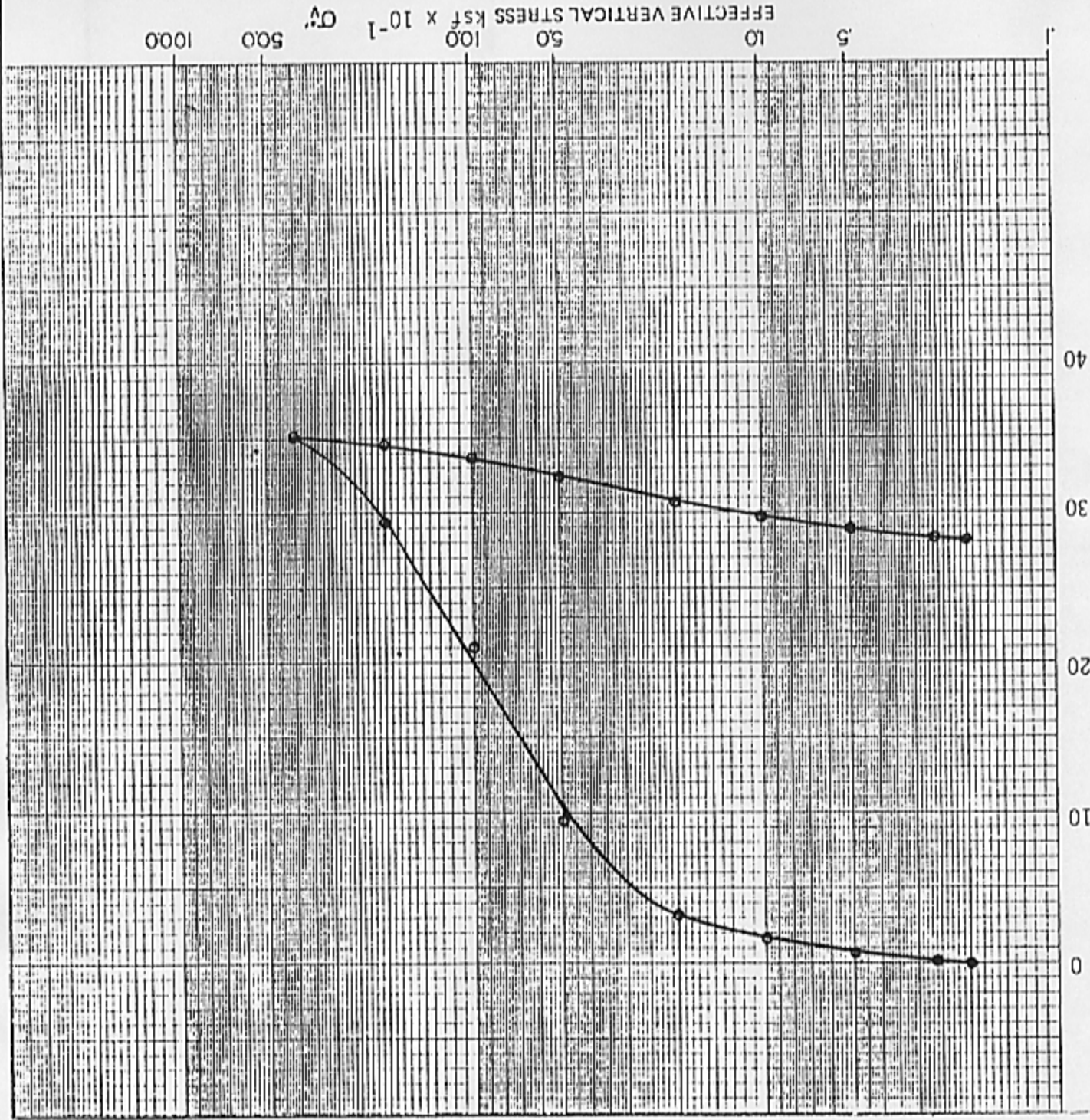
CORE NUMBER B-3 UD-2

DEPTH 11 Feet

CLASSIFICATION Gray Soft CLAY (CH)

NK5-1175C

% STRAIN



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NK5-1175C
BORING NUMBER IS B-3 UD-2
SAMPLE IDENTIFICATION IS GRAY SOFT CLAY (CL)

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 86.30
WET SAMPLE WT (GM) = 83.44 INITIAL WATER CONTENT (%) = 95.47
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 91.53
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 2.8162

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	X INT	X SEC
.02	.2761	.2756	.2752	.80	.7494	0	38
.026	.2749	.2746	.2744	1.00	.7486	47	20
.05	.2739	.2714	.2709	5.20	.7451	15	6
.1	.2705	.2657	.2642	4.75	.7384	6	14
.2	.2635	.2515	.2501	5.80	.7243	4	0
.5	.2491	.2071	.2025	8.85	.6767	2	0
1.0	.2019	.1241	.1231	9.50	.5973	0	-9
2.0	.1091	.0661	.0546	6.50	.5288	22	9
4.0	.0481	.0161	.0000	4.00	.4742	15	22
2.0	.0004	.0033	.0045	1.50	.4787	11	19
1.0	.0050	.0107	.0130	2.80	.4872	7	19
.5	.0133	.0217	.0228	5.90	.4970	3	1
.2	.0244	.0352	.0389	8.50	.5131	11	15
.1	.0407	.0452	.0459	12.30	.5201	26	2
.05	.0460	.0482	.0485	9.00	.5227	3	2
.026	.0547	.0561	.0570	10.00	.5312	79	8
.02	.0571	.0572	.0573	2.75	.5315	47	29

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT IN	STRAIN %	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7494	.00	2.813	*	1.19	.10E-01	.14E+00	.028
.026	.7488	.08	2.810	*	.23	.26E-02	.18E+00	.059
.05	.7455	.52	2.793	*	.24	.24E-02	.15E+00	.097
.1	.7398	1.29	2.764	*	.19	.23E-02	.19E+00	.237
.2	.7258	3.16	2.693	*	.11	.16E-02	.21E+00	.609
.5	.6781	9.52	2.450	*	.08	.14E-02	.23E+00	.471
1.0	.5911	21.13	2.007	*	.09	.64E-03	.82E-01	.044
2.0	.5293	29.38	1.693	*	.13	.33E-03	.28E-01	.711
4.0	.4872	34.99	1.479	*	.34	.79E-04	.24E-02	.061
2.0	.4908	34.51	1.498	*	.19	.16E-03	.91E-02	.116
1.0	.4977	33.59	1.532	*	.09	.22E-03	.26E-01	.163
.5	.5073	32.31	1.581	*	.07	.37E-03	.60E-01	.174
.2	.5209	30.49	1.651	*	.05	.39E-03	.91E-01	.115
.1	.5277	29.59	1.685	*	.07	.40E-03	.68E-01	.043
.05	.5303	29.25	1.698	*	.06	.23E-02	.43E+00	.139
.026	.5380	28.21	1.738	*	.22	.91E-03	.47E-01	.009
.02	.5382	28.18	1.739	*				

CONSOLIDATION TEST

COMPRESSION INDEX .696

SWELLING INDEX .067

MAXIMUM PRECONSOLIDATION
STRESS KSF .28 - .44

INITIAL VOID RATIO 2.117

INITIAL WATER CONTENT 76.46

INITIAL SATURATION 97.52

SAMPLE IDENTIFICATION

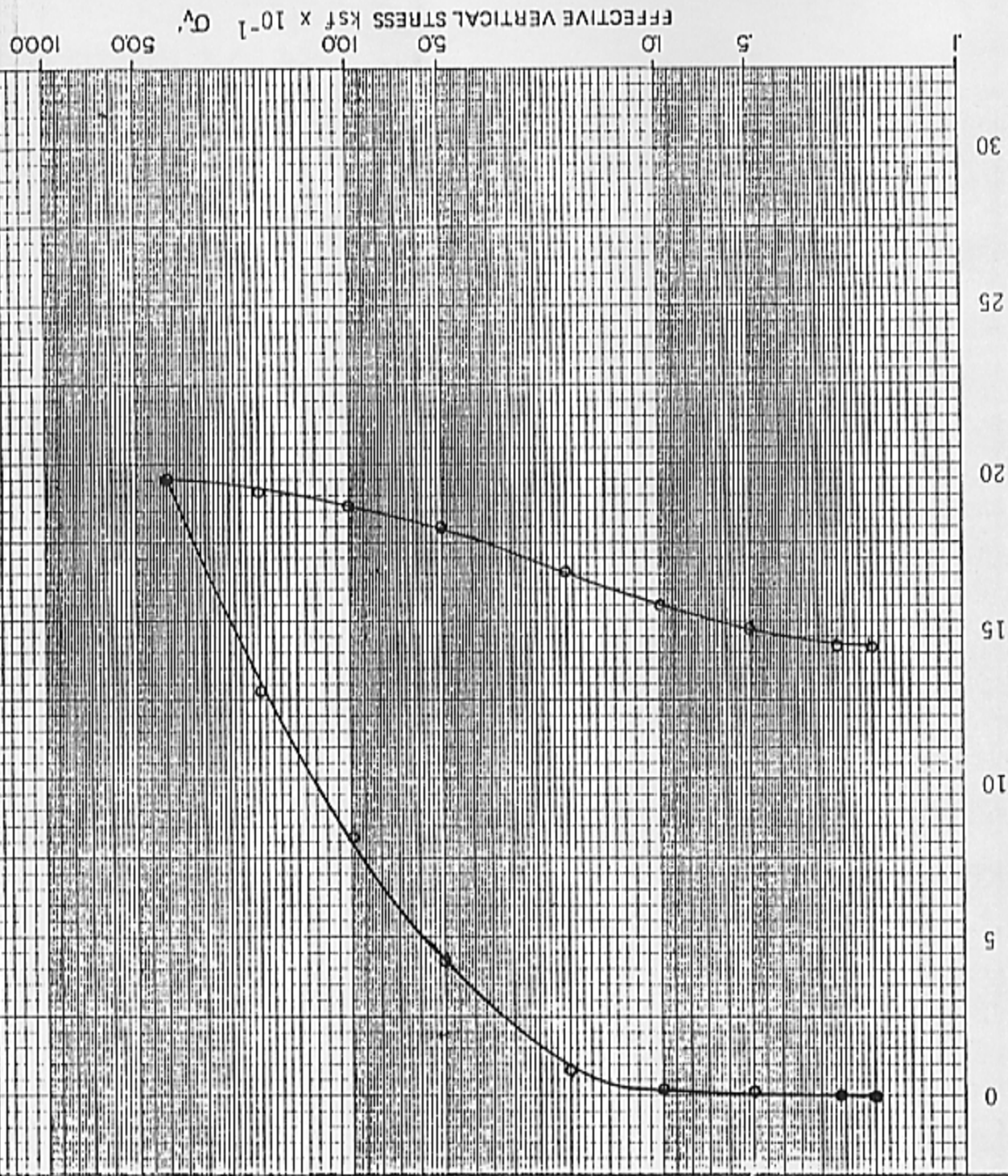
CORE NUMBER B-3 UD-3

DEPTH 16 Feet

CLASSIFICATION Dark Gray
Soft CLAY (CH)

NK5-1175C

% STRAIN



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NK5-1175C
BORING NUMBER IS B-3 UD-3
SAMPLE IDENTIFICATION IS DARK GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 95.38
WET SAMPLE WT (GM) = 92.22 INITIAL WATER CONTENT (%) = 76.46
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 97.52
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 2.1170

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2500	.2497	.2495	2.75	.7497	0	33
.026	.2485	.2493	.2485	2.75	.7487	899	88
.05	.2484	.2476	.2472	5.50	.7474	10	23
.1	.2454	.2449	.2448	2.00	.7450	76	1
.2	.2447	.2414	.2408	2.30	.7410	2	5
.5	.2382	.2175	.2110	5.50	.7112	10	14
1.0	.2018	.1846	.1817	7.00	.6819	32	3
2.0	.1780	.1501	.1492	5.50	.6494	10	-6
4.0	.1310	.1020	.0833	4.60	.5835	36	23
2.0	.0634	.0860	.0880	2.00	.5882	3	36
1.0	.0897	.0914	.0940	2.00	.5942	18	38
.5	.0948	.0979	.0986	4.00	.5988	18	7
.2	.0993	.1087	.1095	10.00	.5097	6	-2
.1	.1166	.1177	.1185	4.00	.6187	85	7
.05	.1194	.1228	.1230	13.75	.6232	19	-3
.026	.1279	.1282	.1284	2.75	.6286	93	3
.02	.1285	.1286	.1287	1.50	.6289	47	29

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT IN	STRAIN %	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7497	.00	2.116	*	.43	.67E-03	.25E-01	.004
.026	.7496	.01	2.115	*	.22	.74E-03	.55E-01	.014
.05	.7486	.15	2.111	*	.59	.23E-02	.63E-01	.033
.1	.7462	.46	2.101	*	.51	.16E-02	.50E-01	.052
.2	.7424	.96	2.086	*	.20	.15E-02	.11E+00	.267
.5	.7168	4.38	1.979	*	.14	.73E-03	.76E-01	.391
1.0	.6885	8.15	1.862	*	.17	.54E-03	.46E-01	.479
2.0	.6538	12.78	1.717	*	.17	.42E-03	.34E-01	.696
4.0	.6034	19.51	1.508	*	.39	.60E-04	.20E-02	.041
2.0	.6064	19.11	1.520	*	.39	.15E-03	.49E-02	.051
1.0	.6101	18.62	1.536	*	.20	.17E-03	.11E-01	.059
.5	.6143	18.05	1.553	*	.08	.31E-03	.50E-01	.116
.2	.6255	16.56	1.600	*	.21	.18E-02	.11E+00	.115
.1	.6338	15.45	1.634	*	.06	.58E-03	.12E+00	.065
.05	.6385	14.83	1.654	*	.32	.68E-02	.29E+00	.077
.026	.6437	14.13	1.675	*	.59	.20E-02	.47E-01	.008
.02	.6439	14.10	1.676	*	.0			

CONSOLIDATION TEST

COMPRESSION INDEX .266

SWELLING INDEX .015

MAXIMUM PRECONSOLIDATION STRESS kgf .18 - .30

INITIAL VOID RATIO 1.245

INITIAL WATER CONTENT 47.58

INITIAL SATURATION 103.21

SAMPLE IDENTIFICATION

CORE NUMBER B-4 UD-1

DEPTH 6 Feet

CLASSIFICATION Dark Gray Soft CLAY (CH)

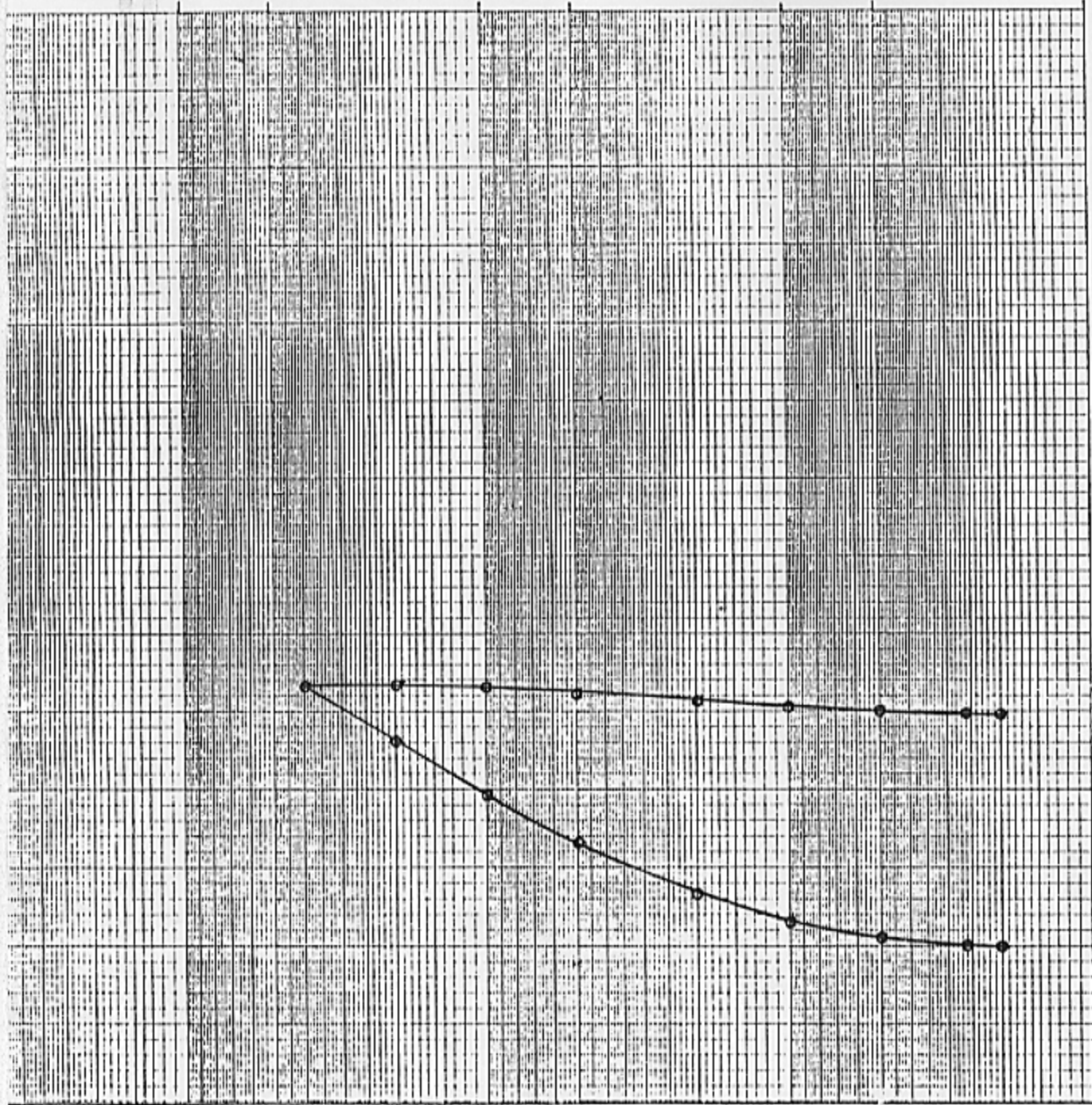
NK5-1175C

% STRAIN

30
20
10
0

1
.5
10
50
100
500
1000
EFFECTIVE VERTICAL STRESS $\text{ksf} \times 10^{-1}$ σ_v

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-4 UD-1
SAMPLE IDENTIFICATION IS DARK GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 110.77
WET SAMPLE WT (GM) = 107.10 INITIAL WATER CONTENT (%) = 47.58
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 103.21
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 1.2447

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2500	.2497	.2495	1.50	.7497	0	33
.026	.2495	.2494	.2492	1.75	.7494	0	62
.05	.2458	.2457	.2456	.50	.7458	96	2
.1	.2454	.2383	.2378	9.60	.7380	2	-3
.2	.2378	.2258	.2252	7.00	.7254	0	-5
.5	.2155	.2008	.1989	8.00	.6991	37	1
1.0	.1948	.1803	.1790	4.50	.6792	20	-1
2.0	.1760	.1550	.1540	3.50	.6542	11	-5
4.0	.1500	.1295	.1263	2.80	.6265	14	3
2.0	.1269	.1272	.1273	1.00	.6275	64	6
1.0	.1278	.1287	.1289	1.00	.6291	33	6
.5	.1294	.1308	.1311	1.50	.6313	24	6
.2	.1315	.1349	.1355	3.00	.6357	9	5
.1	.1359	.1364	.1375	1.40	.6377	41	52
.05	.1379	.1387	.1400	2.00	.6402	31	48
.026	.1401	.1410	.1411	2.80	.6413	9	0
.02	.1415	.1416	.1417	1.25	.6419	78	14

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7497	.00	1.244	*	.0	.68	.10E-02	.25E-01	.003
.026	.7496	.01	1.243	*	.0	2.36	.29E-01	.20E+00	.037
.05	.7460	.48	1.233	*	.0	.12	.16E-02	.22E+00	.080
.1	.7380	1.56	1.209	*	.1	.16	.18E-02	.18E+00	.133
.2	.7246	3.34	1.169	*	.2	.13	.99E-03	.12E+00	.196
.5	.6986	6.81	1.091	*	.4	.22	.80E-03	.54E-01	.201
1.0	.6784	9.51	1.030	*	.8	.26	.64E-03	.35E-01	.262
2.0	.6520	13.02	.952	*	1.5	.30	.39E-03	.18E-01	.266
4.0	.6253	16.59	.871	*	3.0	.83	.39E-04	.62E-03	.009
2.0	.6262	16.47	.874	*	3.0	.84	.12E-03	.20E-02	.015
1.0	.6277	16.27	.879	*	1.5	.56	.23E-03	.55E-02	.020
.5	.6298	16.00	.885	*	.8	.28	.39E-03	.19E-01	.031
.2	.6339	15.44	.897	*	.4	.61	.57E-03	.13E-01	.010
.1	.6349	15.31	.900	*	.2	.43	.11E-02	.34E-01	.013
.05	.6362	15.14	.904	*	.1	.31	.14E-02	.61E-01	.012
.026	.6373	14.99	.907	*	.0	.69	.58E-02	.11E+00	.013
.02	.6378	14.92	.909	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX .551

SWELLING INDEX .043

MAXIMUM PRECONSOLIDATION STRESS $kst = .22 = .31$

INITIAL VOID RATIO 1.798

INITIAL WATER CONTENT 59.84

INITIAL SATURATION 89.85

SAMPLE IDENTIFICATION

CORE NUMBER B-4 UD-2

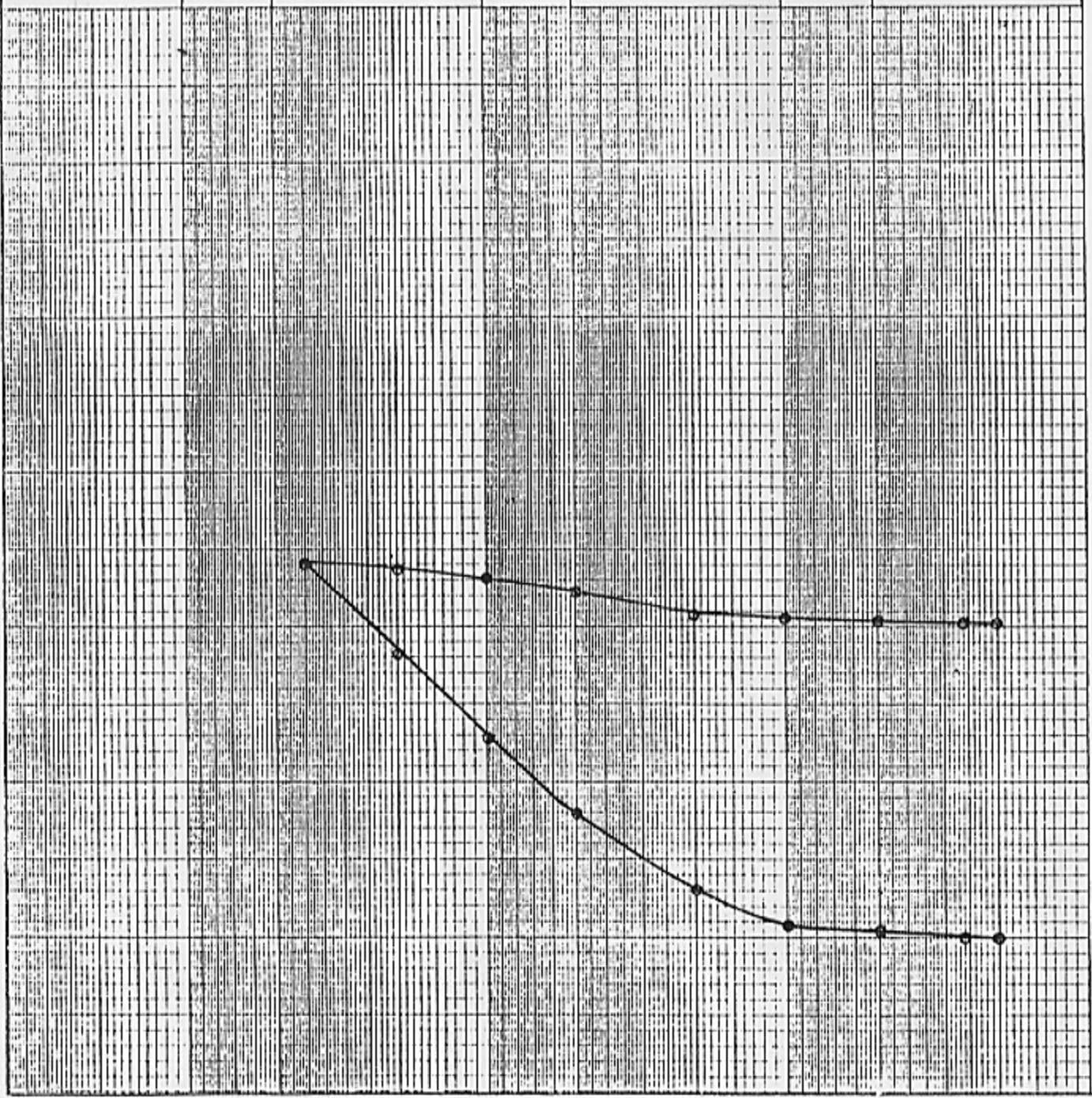
DEPTH 11 Feet

CLASSIFICATION Black to Gray Soft CLAY (CH)

NK5-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $kst \times 10^{-1}$



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-4 UD-2
SAMPLE IDENTIFICATION IS BLACK TO GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 96.24
WET SAMPLE WT (GM) = 93.05 INITIAL WATER CONTENT (%) = 59.84
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 89.85
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 1.7983

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2500	.2498	.2496	2.00	.7498	0	44
.026	.2496	.2495	.2494	1.75	.7496	0	44
.05	.2472	.2468	.2464	.75	.7466	83	11
.1	.2462	.2428	.2386	3.25	.7388	5	49
.2	.2374	.2246	.2226	6.50	.7228	7	3
.5	.2072	.1884	.1855	9.75	.6857	42	2
1.0	.1741	.1510	.1475	7.75	.6477	30	2
2.0	.1450	.1105	.1089	6.80	.6091	6	-5
4.0	.1050	.0685	.0635	5.80	.5637	8	2
2.0	.0638	.0660	.0664	2.00	.5666	10	5
1.0	.0674	.0709	.0715	3.15	.5717	20	4
.5	.0723	.0779	.0784	4.75	.5786	11	-1
.2	.0791	.0885	.0890	8.75	.5892	6	-5
.1	.0892	.0898	.0915	1.50	.5917	23	65
.05	.0917	.0924	.0933	1.50	.5935	20	45
.026	.0933	.0937	.0959	1.00	.5961	0	82
.02	.0961	.0966	.0970	2.00	.5972	26	31

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7498	.00	1.797 *			.68	.10E-02	.25E-01	.004
.026	.7497	.01	1.797 *		.0	1.58	.14E-01	.15E+00	.035
.05	.7470	.37	1.787 *		.0				
.1	.7430	.90	1.772 *		.1	.36	.24E-02	.11E+00	.049
.2	.7276	2.95	1.715 *		.2	.17	.23E-02	.21E+00	.191
.5	.6913	7.79	1.579 *		.4	.10	.11E-02	.16E+00	.340
1.0	.6543	12.74	1.441 *		.8	.12	.81E-03	.99E-01	.459
2.0	.6134	18.18	1.289 *		1.5	.12	.48E-03	.54E-01	.506
4.0	.5690	24.11	1.123 *		3.0	.12	.28E-03	.30E-01	.551
2.0	.5717	23.75	1.133 *		3.0	.35	.52E-04	.18E-02	.034
1.0	.5766	23.10	1.151 *		1.5	.22	.12E-03	.65E-02	.061
.5	.5836	22.16	1.178 *		.8	.15	.23E-03	.19E-01	.087
.2	.5948	20.67	1.219 *		.4	.09	.34E-03	.50E-01	.104
.1	.5956	20.56	1.222 *		.2	.50	.46E-03	.12E-01	.011
.05	.5966	20.43	1.226 *		.1	.50	.10E-02	.26E-01	.012
.026	.5971	20.37	1.228 *		.0	.76	.15E-02	.25E-01	.006
.02	.5978	20.27	1.230 *		.0	.38	.50E-02	.17E+00	.025

CONSOLIDATION TEST

COMPRESSION INDEX .736

SWELLING INDEX .044

MAXIMUM PRECONSOLIDATION STRESS ksf .35 - .50

INITIAL VOID RATIO 2.34

INITIAL WATER CONTENT 80.85

INITIAL SATURATION 93.22

SAMPLE IDENTIFICATION

CORE NUMBER B-4 UD-3

DEPTH 16 feet

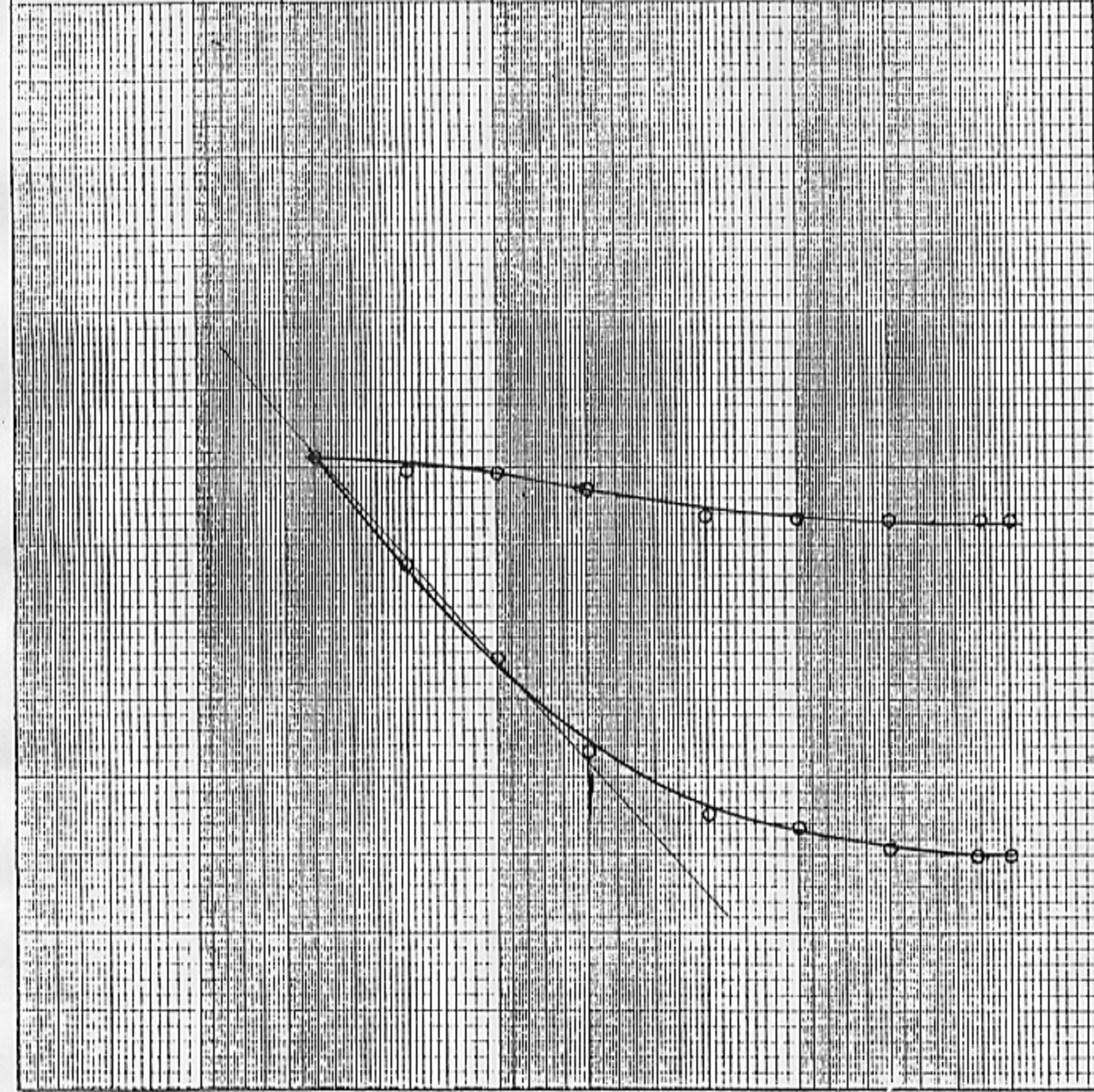
CLASSIFICATION Black Soft CLAY (CH)

NKS-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $\text{ksf} \times 10^{-1}$ Q_v

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NK5-1175C
BORING NUMBER IS B-4 UD-3
SAMPLE IDENTIFICATION IS BLACK SOFT CLAY (CH)

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 91.18
WET SAMPLE WT (GM) = 88.16 INITIAL WATER CONTENT (%) = 80.85
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 93.22
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 2.3417

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2500	.2424	.2417	5.50	.7416	0	-1
.026	.2415	.2414	.2412	1.50	.7411	64	37
.05	.2411	.2406	.2386	1.00	.7385	15	74
.1	.2378	.2312	.2310	6.50	.7309	9	-7
.2	.2310	.2240	.2227	2.80	.7226	0	6
.5	.2215	.1960	.1950	5.00	.6949	4	-6
1.0	.1945	.1525	.1470	6.00	.6469	1	1
2.0	.1470	.1080	.1005	4.75	.6004	0	6
4.0	.0780	.0535	.0474	4.00	.5473	45	6
2.0	.0475	.0505	.0512	2.00	.5511	2	9
1.0	.0512	.0543	.0557	1.60	.5556	0	23
.5	.0566	.0610	.0627	2.60	.5626	15	17
.2	.0640	.0736	.0743	6.80	.5742	10	-3
.1	.0745	.0746	.0817	10.75	.5816	64	95
.05	.0820	.0821	.0838	.75	.5837	72	80
.026	.0839	.0841	.0860	.50	.5859	31	85
.02	.0861	.0863	.0867	1.60	.5866	31	53

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7416	.00	2.304	*	.0	.78	.34E-02	.70E-01	.012
.026	.7412	.04	2.303	*	.0	1.16	.27E-02	.37E-01	.010
.05	.7406	.13	2.300	*	.0	.18	.24E-02	.22E+00	.120
.1	.7325	1.23	2.264	*	.1	.40	.27E-02	.10E+00	.115
.2	.7247	2.28	2.229	*	.2	.21	.18E-02	.13E+00	.331
.5	.6951	6.26	2.097	*	.4	.15	.13E-02	.13E+00	.698
1.0	.6480	12.62	1.887	*	.8	.17	.71E-03	.58E-01	.641
2.0	.6046	18.46	1.694	*	1.5	.16	.44E-03	.34E-01	.736
4.0	.5549	25.17	1.473	*	3.0	.33	.64E-04	.23E-02	.051
2.0	.5584	24.70	1.488	*	3.0	.42	.16E-03	.46E-02	.051
1.0	.5618	24.24	1.503	*	1.5	.26	.34E-03	.16E-01	.086
.5	.5676	23.46	1.529	*	.8	.10	.45E-03	.54E-01	.134
.2	.5796	21.85	1.582	*	.4	.07	.22E-04	.42E-02	.005
.1	.5799	21.80	1.584	*	.2	.95	.84E-03	.11E-01	.006
.05	.5803	21.75	1.585	*	.1	1.43	.21E-02	.18E-01	.005
.026	.5806	21.71	1.587	*	.0	.45	.26E-02	.72E-01	.013
.02	.5809	21.66	1.588	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX 1.77

SWELLING INDEX 0.20

MAXIMUM PRECONSOLIDATION STRESS 0.55 ksf

INITIAL VOID RATIO 3.330

INITIAL WATER CONTENT 112.9%

INITIAL SATURATION 89.5%

SAMPLE IDENTIFICATION

Boring Number B-5 UD-1

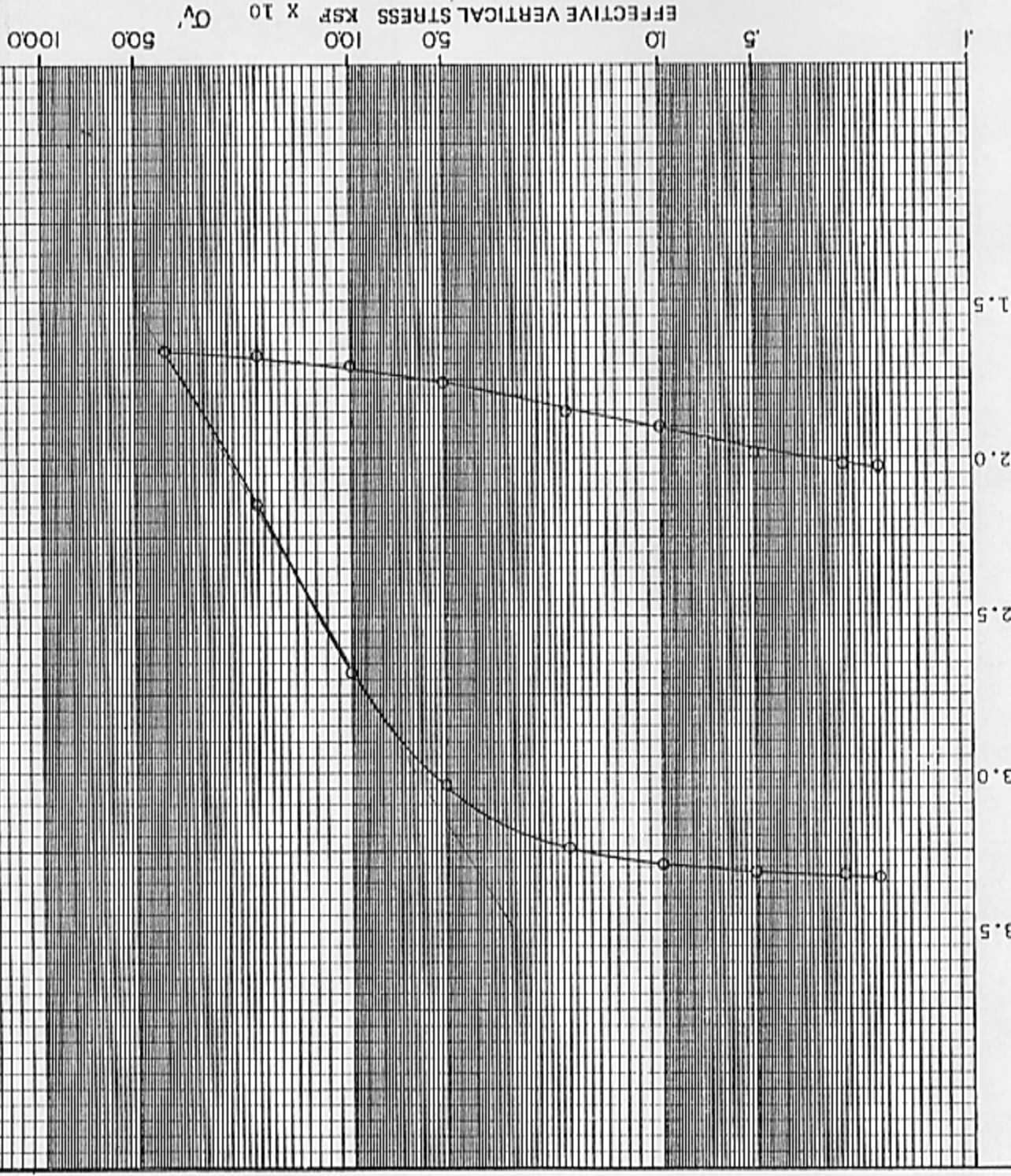
DEPTH 6.7 ft.

CLASSIFICATION Soft Dark Gray Clay, Trace Fine Sand and Voids CH

NK5-1175

Craneey Island

VOID RATIO



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE NE-1175 CRANEY ISLAND
DURING NUMBER IS B-3 VD @ 5.75'
SAMPLER IDENTIFICATION IS SOFT DARK GRAY CLAY. TRACE FINE SAND

SPECIFIC GRAVITY = 2.64 INITIAL WET UNIT WT (PCF) = 81.0
WET SAMPLE WT (GM) = 104.46 INITIAL WATER CONTENT (%) = 112.9
VOL OF SAMPLE (CC) = 80.44 INITIAL SATURATION (%) = 89.3
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 3.320
SAMPLE THICKNESS (IN) = 1.000

SAMPLE INUNDATED AT 0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	STRAIN %	CU (IN)	D 90 (IN)	DEND (IN)	T90 MIN	AT DEND	HT IN	% INT	% SEC
0.2	0.0	2.672	2.672	2.672	1.00	9999	2.672	2.672	0
0.3	0.3	2.673	2.673	2.673	1.00	9998	2.673	2.673	0
0.5	0.5	2.680	2.680	2.690	4.00	9981	2.690	2.690	0
1.0	1.0	2.715	2.711	2.751	1.70	9920	2.751	2.751	0
2.0	2.0	2.792	2.843	2.868	6.00	9803	2.868	2.868	0
3.0	3.0	2.976	3.273	3.350	26.00	9321	3.350	3.350	0
4.0	4.0	3.387	4.093	4.172	28.00	8499	4.172	4.172	0
5.0	5.0	4.200	5.300	5.406	50.00	7265	5.406	5.406	0
6.0	6.0	5.442	6.420	6.528	41.00	6143	6.528	6.528	0
7.0	7.0	6.512	6.509	6.506	4.00	6145	6.506	6.506	0
8.0	8.0	6.492	6.429	6.421	14.00	5250	6.421	6.421	0
9.0	9.0	6.413	6.001	6.288	40.00	4383	6.288	6.288	0
10.0	10.0	6.288	6.106	6.086	105.00	4287	6.086	6.086	0
15.0	15.0	6.083	5.953	5.972	150.00	6699	5.972	5.972	0
20.0	20.0	5.970	5.790	5.770	240.00	6901	5.770	5.770	0
25.0	25.0	5.770	5.678	5.690	240.00	6781	5.690	5.690	0
30.0	30.0	5.690	5.672	5.670	240.00	7001	5.670	5.670	0

STRESS KSF	STRAIN %	VOID RATIO	AVG STRESS FT/DAY	CV FT/DAY	PERM FT/DAY	FT/KIP	MV CC
0.2	0.0	3.320	0	2.1	2.32	1.72	2.004
0.3	0.3	3.329	0	3	2.32	7.12	0.04
0.5	0.5	3.322	0	1	9.42	1.22	0.08
1.0	1.0	3.295	2	3	2.52	1.22	1.68
2.0	2.0	3.245	4	1	9.82	1.42	1.524
3.0	3.0	3.036	0	1	6.42	1.42	1.182
4.0	4.0	2.680	1.5	0	2.52	1.22	1.172
5.0	5.0	2.146	3.0	0	1.12	3.62	1.614
6.0	6.0	1.660	3.0	2	2.22	1.12	0.32
7.0	7.0	1.669	1.5	1	4.42	8.32	1.22
8.0	8.0	1.706	8	0	5.72	2.72	1.91
9.0	9.0	1.764	4	0	5.62	6.72	2.20
10.0	10.0	1.851	4	0	5.62	6.72	2.20

10	23.00	1.901	2	0	7.82	1.12	1.169
0.5	30.98	1.908	1	0	1.62	4.02	1.291
0.5	30.18	2.023	0	0	1.32	3.32	1.122
0.2	29.98	2.031	0	0	1.32	3.32	1.074

CONSOLIDATION TEST

COMPRESSION INDEX .095

SWELLING INDEX .008

MAXIMUM PRECONSOLIDATION STRESS $k_s f$.16 - .20

INITIAL VOID RATIO 1.479

INITIAL WATER CONTENT 72.69

INITIAL SATURATION 132.72

SAMPLE IDENTIFICATION

CORE NUMBER B-5 UD-2

DEPTH 11 Feet

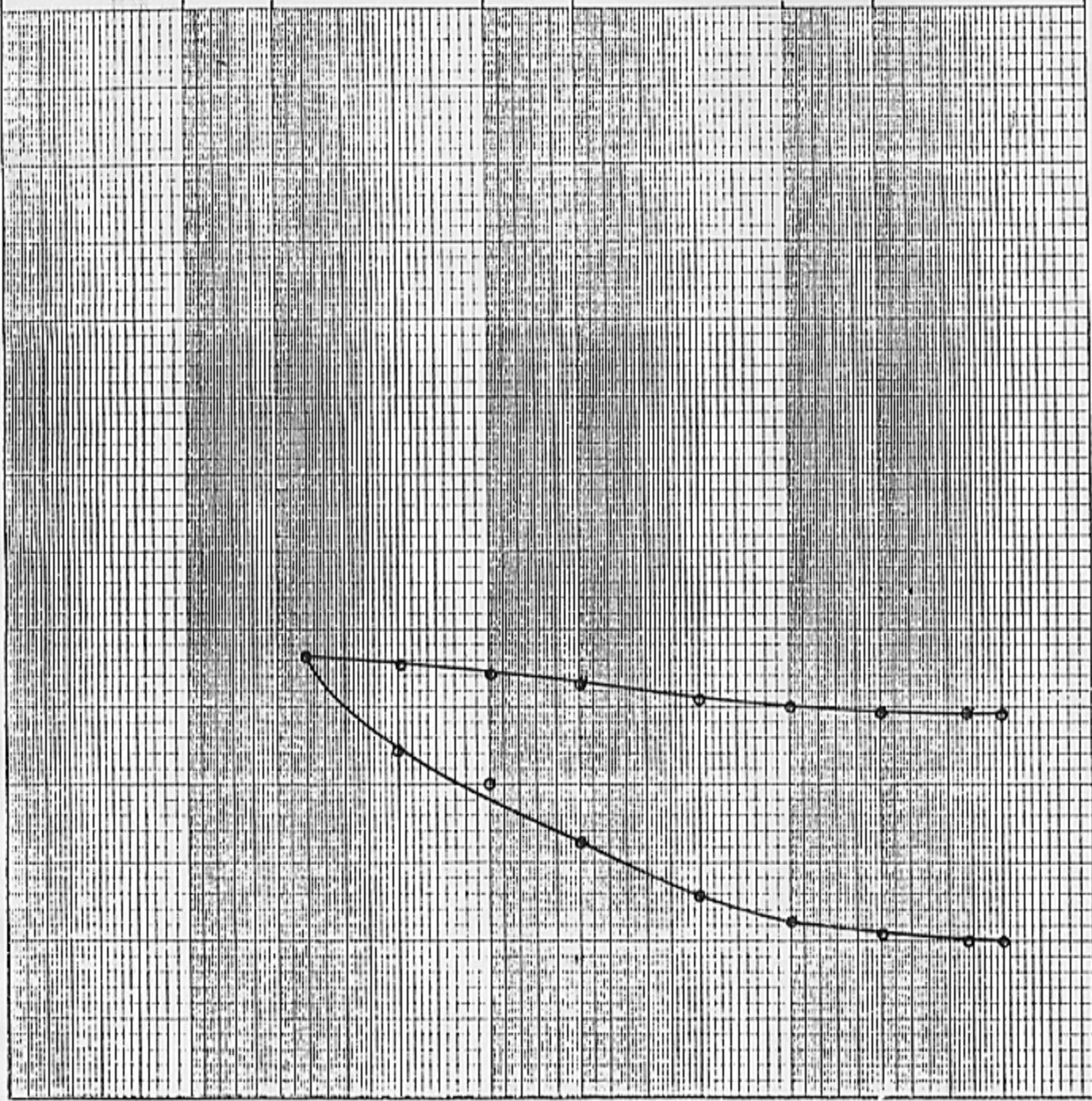
CLASSIFICATION Gray to Black Sandy Soft CLAY (CH)

NK5-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $k_s f \times 10^{-1}$ QV

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C

BORING NUMBER IS B-5 UD-2

SAMPLE IDENTIFICATION IS GRAY TO BLACK SANDY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 117.38
WET SAMPLE WT (GM) = 113.49 INITIAL WATER CONTENT (%) = 72.69
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 132.72
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 1.4787

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2500	.2497	.2496	1.00	.7497	0	16
.026	.2495	.2493	.2492	2.00	.7493	31	19
.05	.2491	.2488	.2487	1.50	.7488	23	13
.1	.2482	.2476	.2472	1.50	.7473	42	22
.2	.2465	.2453	.2440	.75	.7441	34	36
.5	.2409	.2387	.2376	1.00	.7377	55	13
1.0	.2348	.2321	.2305	1.00	.7306	48	18
2.0	.2276	.2276	.2227	.75	.7228	100	62
4.0	.2176	.2144	.2133	.80	.7134	58	7
2.0	.2135	.2136	.2137	1.00	.7138	64	22
1.0	.2143	.2146	.2148	.90	.7149	64	15
.5	.2155	.2159	.2160	.75	.7161	61	4
.2	.2168	.2172	.2175	.75	.7176	64	17
.1	.2180	.2182	.2184	.75	.7185	69	19
.05	.2186	.2189	.2190	1.00	.7191	37	11
.026	.2193	.2194	.2195	1.75	.7196	72	17
.02	.2195	.2197	.2199	2.00	.7200	0	44

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	IN	% STRAIN	VOID RATIO	*AVG *STRESS	CV	PERM FT/DAY	MV FT2/KIP	CC
.02	.7497	.00	1.478	*	.0	.60	.27E-02	.72E-01	.009
.026	.7493	.04	1.477	*	.0	.79	.12E-02	.24E-01	.005
.05	.7489	.10	1.475	*	.1	.79	.15E-02	.31E-01	.013
.1	.7477	.26	1.471	*	.2	1.57	.27E-02	.27E-01	.022
.2	.7457	.53	1.465	*	.4	1.16	.18E-02	.25E-01	.046
.5	.7402	1.27	1.446	*	.8	1.14	.11E-02	.15E-01	.064
1.0	.7344	2.04	1.427	*	1.5	1.51	.37E-03	.39E-02	.032
2.0	.7315	2.43	1.417	*	3.0	1.39	.51E-03	.58E-02	.095
4.0	.7228	3.58	1.389	*	3.0	1.11	.15E-04	.21E-03	.003
2.0	.7231	3.54	1.390	*	1.5	1.23	.99E-04	.12E-02	.010
1.0	.7241	3.42	1.393	*	.8	1.49	.29E-03	.31E-02	.013
.5	.7252	3.26	1.397	*	.4	1.49	.53E-03	.55E-02	.010
.2	.7264	3.10	1.401	*	.2	1.49	.93E-03	.96E-02	.008
.1	.7272	3.00	1.403	*	.1	1.12	.10E-02	.14E-01	.006
.05	.7277	2.93	1.405	*	.0	.64	.94E-03	.23E-01	.005
.026	.7281	2.88	1.406	*	.0	.56	.18E-02	.49E-01	.006
.02	.7283	2.85	1.407	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX 1.949

SWELLING INDEX .133

MAXIMUM PRECONSOLIDATION STRESS $\text{ksf} \cdot 78 - 1.00$

INITIAL VOID RATIO 2.233

INITIAL WATER CONTENT 69.91

INITIAL SATURATION 84.53

SAMPLE IDENTIFICATION

CORE NUMBER B-5 UD-3

DEPTH 16 Feet

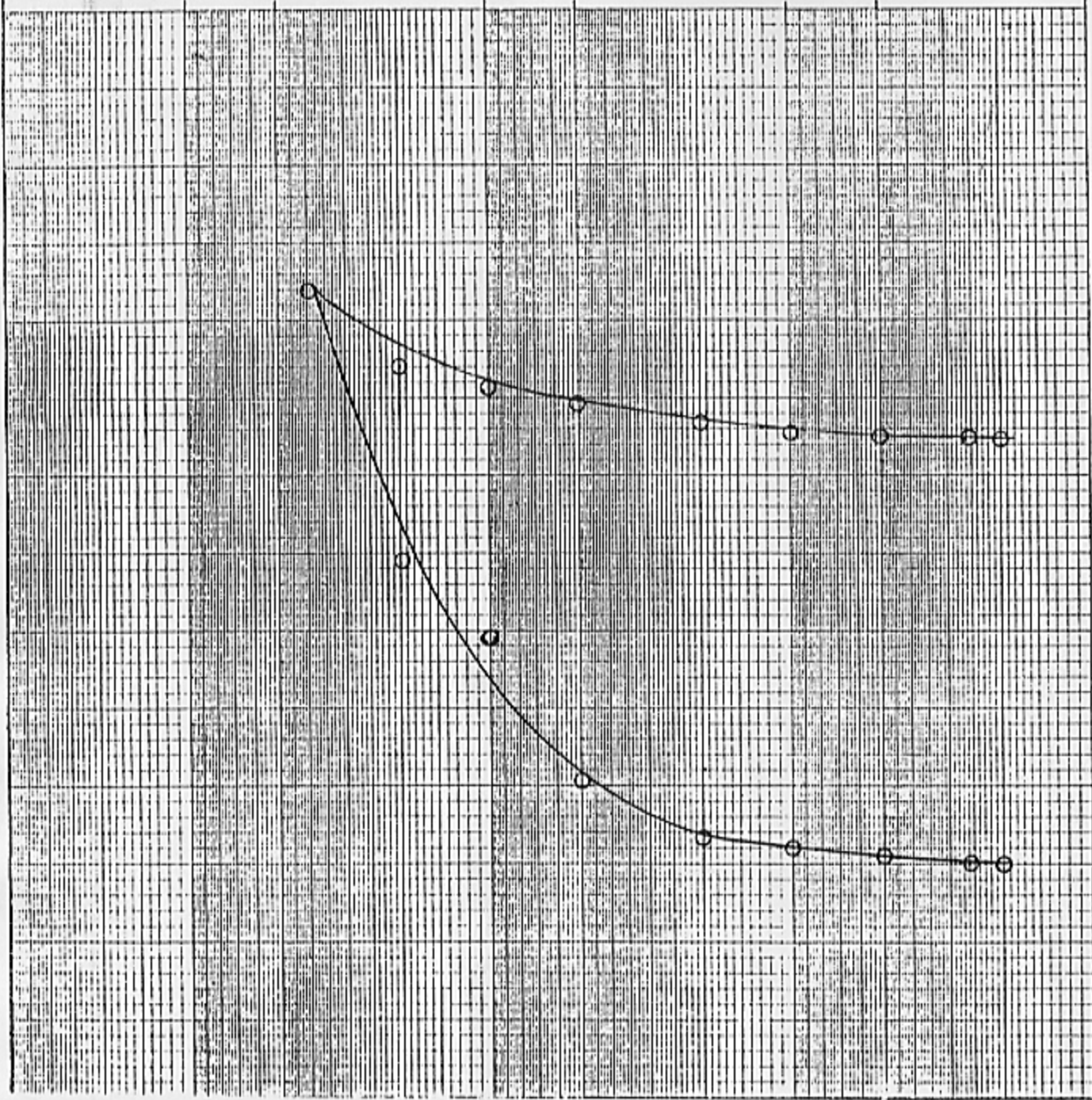
CLASSIFICATION Gray Soft CLAY (CH)

NKS-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $\text{ksf} \times 10^{-1}$

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-5 UD-3
SAMPLE IDENTIFICATION IS GRAY SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 88.54
WET SAMPLE WT (GM) = 85.61 INITIAL WATER CONTENT (%) = 69.91
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 84.53
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 2.2331

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2894	.2885	.2883	2.25	.7480	50	4
.026	.2882	.2876	.2875	3.15	.7472	13	4
.05	.2875	.2864	.2861	2.00	.7458	0	12
.1	.2858	.2846	.2830	1.00	.7427	18	47
.2	.2824	.2771	.2752	2.50	.7349	9	16
.5	.2728	.2506	.2479	4.35	.7076	8	1
1.0	.2458	.1860	.1854	2.15	.6451	3	-9
2.0	.1854	.1554	.1355	2.30	.5952	0	33
4.0	.0705	.0065	.0000	4.50	.4597	47	0
2.0	.0378	.0405	.0410	1.50	.5007	92	0
1.0	.0413	.0456	.0466	2.15	.5063	5	9
.5	.0479	.0551	.0552	5.30	.5149	13	-8
.2	.0555	.0597	.0615	2.50	.5212	6	21
.1	.0623	.0727	.0734	9.50	.5331	6	-3
.05	.0737	.0742	.0786	1.50	.5383	35	83
.026	.0794	.0796	.0803	.75	.5400	78	39
.02	.0805	.0806	.0815	.75	.5412	64	74

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN %	VOID RATIO	AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.02	.7480	.00	2.224 *	.0	.38	.40E-02	.17E+00	.029
.026	.7472	.10	2.221 *	.0	.59	.25E-02	.68E-01	.019
.05	.7460	.27	2.216 *	.0	1.18	.32E-02	.44E-01	.023
.1	.7444	.48	2.209 *	.1	.46	.25E-02	.87E-01	.093
.2	.7379	1.35	2.181 *	.2	.25	.19E-02	.12E+00	.291
.5	.7110	4.94	2.065 *	.4	.42	.53E-02	.18E+00	.982
1.0	.6425	14.10	1.770 *	.8	.35	.11E-02	.45E-01	.477
2.0	.6092	18.56	1.626 *	1.5	.11	.85E-03	.91E-01	.949
4.0	.4731	36.76	1.039 *	3.0	.37	.96E-03	.27E-01	.584
2.0	.5139	31.30	1.215 *	3.0	.27	.16E-03	.68E-02	.073
1.0	.5189	30.62	1.237 *	1.5	.11	.25E-03	.25E-01	.133
.5	.5282	29.38	1.277 *	.8	.24	.47E-03	.22E-01	.054
.2	.5332	28.72	1.298 *	.4	.07	.95E-03	.17E+00	.177
.1	.5456	27.06	1.352 *	.2	.42	.83E-03	.23E-01	.012
.05	.5464	26.95	1.355 *	.1	.85	.41E-02	.57E-01	.016
.026	.5474	26.81	1.360 *	.0	.85	.50E-02	.69E-01	.012
.02	.5477	26.77	1.361 *	.0				

CONSOLIDATION TEST

COMPRESSION INDEX 1.918

SWELLING INDEX .149

MAXIMUM PRECONSOLIDATION STRESS $\text{ksf} \cdot 29 - .39$

INITIAL VOID RATIO 4.341

INITIAL WATER CONTENT 151.91

INITIAL SATURATION 94.48

SAMPLE IDENTIFICATION

CORE NUMBER B-6 UD-1

DEPTH 6 Feet

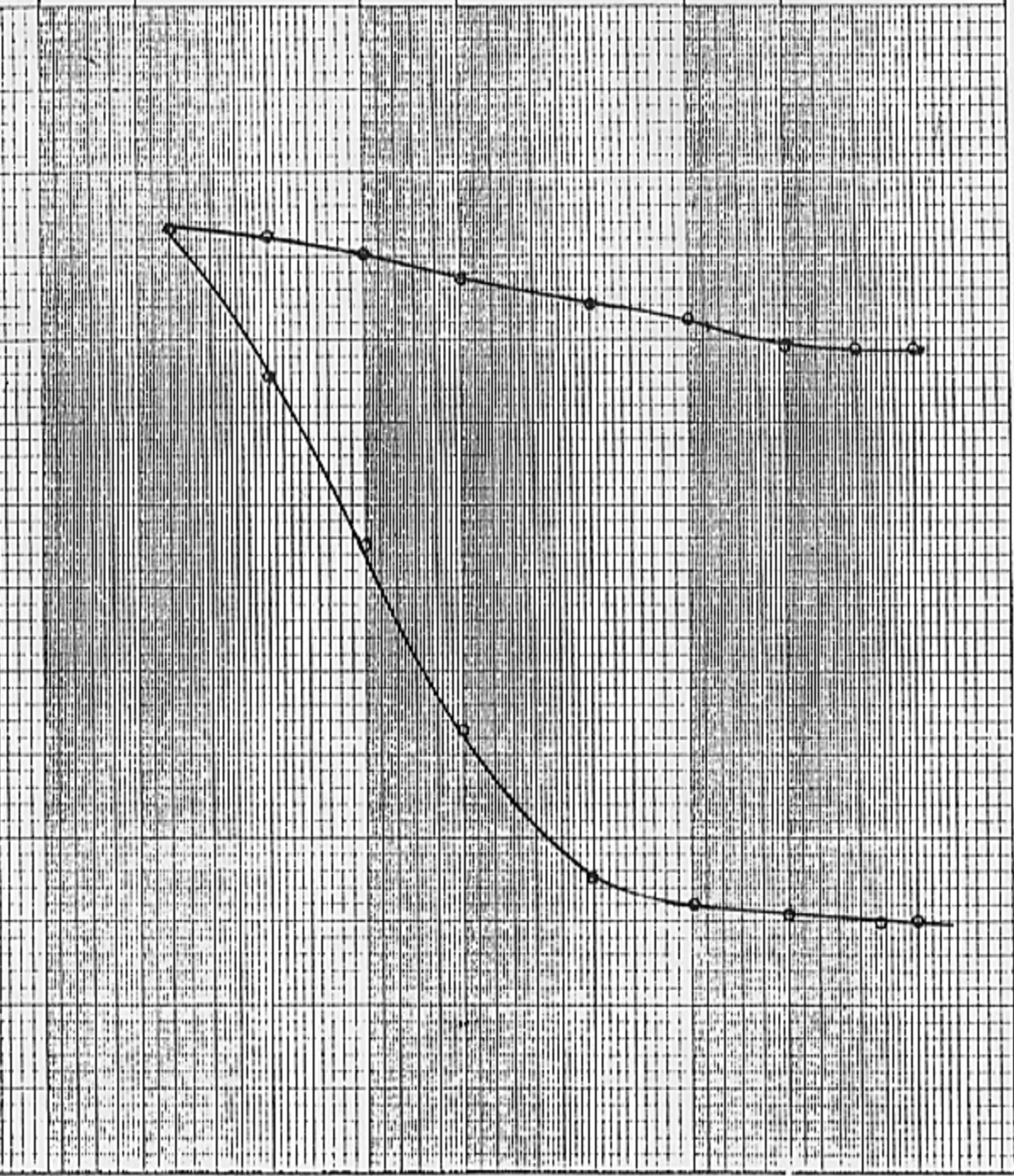
CLASSIFICATION Gray to Black Soft CLAY (CH)

NK5-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $\text{ksf} \times 10^{-1} \sigma_v$

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND

BORING NUMBER IS B-6 UD-1

SAMPLE IDENTIFICATION IS GRAY TO BLACK SOFT CLAY

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PDF) = 79.46
WET SAMPLE WT (GM) = 76.83 INITIAL WATER CONTENT (%) = 151.91
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 94.48
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 4.3412

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.3053	.3084	.3073	1.40	.7488	16	29
.026	.3076	.3072	.3070	1.75	.7480	31	19
.05	.3065	.3048	.3045	2.80	.7455	20	4
.1	.3041	.3004	.2997	2.15	.7407	8	6
.2	.2981	.2863	.2838	2.90	.7248	10	7
.5	.2799	.2245	.2170	4.50	.6580	5	2
1.0	.2115	.1435	.1380	4.75	.5790	6	-2
2.0	.1325	.0695	.0658	4.50	.5068	7	-4
4.0	.0400	.0014	.0000	4.00	.4410	37	-4
2.0	.0000	.0037	.0042	1.30	.4452	0	2
1.0	.0000	.0119	.0127	2.80	.4537	-46	-6
.5	.0128	.0205	.0215	1.25	.4625	1	1
.2	.0225	.0335	.0334	5.50	.4744	7	**
.1	.0340	.0375	.0374	4.00	.4784	13	**
.05	.0385	.0487	.0493	9.40	.4903	8	-4
.026	.0494	.0499	.0534	2.00	.4944	15	84
.02	.0536	.0533	.0543	1.40	.4953	47	53

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN %	VOID RATIO	AVG STRESS	CV FT2/DAY	PERM FT/DAY	MV KIP	CC
.02	.7488	.00	4.333	*	.68	.61E-02	.14E+00	.040
.026	.7482	.09	4.328	*	.42	.35E-02	.13E+00	.060
.05	.7458	.41	4.311	*	.54	.41E-02	.12E+00	.107
.1	.7413	1.01	4.279	*	.39	.48E-02	.20E+00	.348
.2	.7265	2.97	4.174	*	.21	.41E-02	.29E+00	.171
.5	.6611	11.71	3.708	*	.15	.25E-02	.22E+00	.918
1.0	.5800	22.54	3.131	*	.12	.11E-02	.10E+00	.786
2.0	.5045	32.62	2.593	*	.10	.47E-03	.46E-01	.625
4.0	.4358	41.79	2.104	*	.32	.92E-04	.27E-02	.097
2.0	.4400	41.25	2.133	*	.15	.19E-03	.12E-01	.213
1.0	.4490	40.04	2.197	*	.35	.84E-03	.23E-01	.205
.5	.4576	38.89	2.259	*	.09	.50E-03	.59E-01	.237
.2	.4709	37.12	2.353	*	.12	.71E-03	.60E-01	.106
.1	.4753	36.52	2.385	*	.05	.17E-02	.33E+00	.294
.05	.4878	34.86	2.474	*	.25	.88E-03	.36E-01	.016
.026	.4884	34.77	2.478	*	.36	.33E-02	.94E-01	.026
.02	.4889	34.72	2.481	*	.0			

CONSOLIDATION TEST

1.224

COMPRESSION INDEX

0.89

SWELLING INDEX

MAXIMUM PRECONSOLIDATION
STRESS $\text{ksf} \cdot 37 - .51$

INITIAL VOID RATIO 3.779

INITIAL WATER CONTENT 136.25

INITIAL SATURATION 97.33

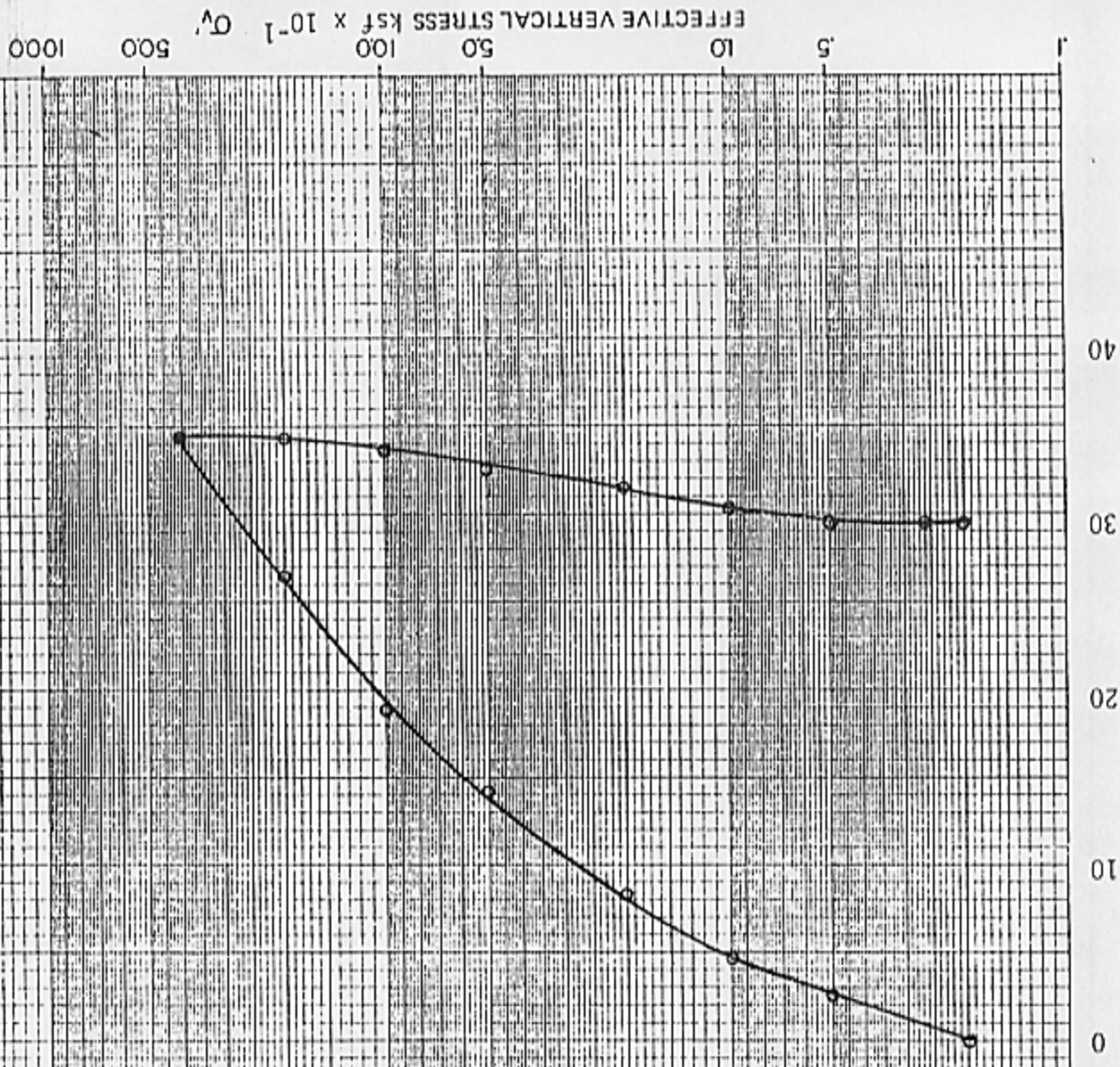
SAMPLE IDENTIFICATION

CORE NUMBER B-6 UD-2

DEPTH 11 Feet

CLASSIFICATION Gray to
Black Soft CLAY (CH)

NK5-1175C



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NKS-1175C
BORING NUMBER IS B-6 UD-2
SAMPLE IDENTIFICATION IS GRAY TO BLACK SOFT CLAY (CL)

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 83.28
WET SAMPLE WT (GM) = 80.52 INITIAL WATER CONTENT (%) = 136.25
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 97.33
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 3.7796

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2742	.2467	.2459	10.50	.7194	0	-7
.026	.2279	.2278	.2277	1.40	.7012	99	0
.05	.2275	.2266	.2263	2.80	.6998	16	14
.1	.2262	.2140	.2134	9.90	.6869	0	-5
.2	.2101	.1882	.1874	10.25	.6609	11	-6
.5	.1866	.1510	.1450	5.80	.6185	1	4
1.0	.1322	.1140	.1140	4.00	.5875	38	-6
2.0	.1082	.0614	.0591	5.00	.5326	10	-5
4.0	.0542	.0074	.0000	4.40	.4735	8	3
2.0	.0001	.0015	.0025	1.00	.4760	6	33
1.0	.0032	.0072	.0080	2.00	.4815	13	6
.5	.0085	.0152	.0159	4.50	.4894	6	0
.2	.0160	.0242	.0242	5.25	.4977	1	**
.1	.0243	.0318	.0322	9.75	.5057	1	-5
.05	.0322	.0351	.0351	11.00	.5086	0	**
.026	.0352	.0353	.0357	1.00	.5092	47	64
.02	.0357	.0357	.0359	.70	.5094	0	**

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.02	.7194	.00	3.585	*	.0	.74	.20E+00	.42E+01	.013
.026	.7013	2.52	3.469	*	.0	.37	.17E-02	.69E-01	.027
.05	.7001	2.68	3.462	*	.0	.10	.25E-02	.38E+00	.289
.1	.6865	4.58	3.375	*	.1	.09	.23E-02	.38E+00	.585
.2	.6588	8.42	3.199	*	.2	.14	.19E-02	.19E+00	.646
.5	.6185	14.03	2.941	*	.4	.18	.13E-02	.92E-01	.699
1.0	.5855	18.62	2.731	*	.8	.12	.78E-03	.80E-01	.224
2.0	.5277	26.66	2.363	*	1.5	.11	.39E-03	.40E-01	.205
4.0	.4708	34.57	2.000	*	3.0	.47	.52E-04	.12E-02	.035
2.0	.4724	34.34	2.011	*	3.0	.24	.16E-03	.72E-02	.109
1.0	.4776	33.62	2.043	*	1.5	.11	.23E-03	.22E-01	.168
.5	.4855	32.52	2.094	*	.8	.10	.38E-03	.43E-01	.148
.2	.4947	31.24	2.153	*	.4	.05	.58E-03	.12E+00	.179
.1	.5032	30.06	2.206	*	.2	.05	.39E-03	.90E-01	.068
.05	.5064	29.62	2.227	*	.1	.54	.59E-03	.12E-01	.005
.026	.5066	29.59	2.228	*	.0	.78	.00E+00	.00E+00	.000
.02	.5066	29.59	2.228	*	.0				

CONSOLIDATION TEST

COMPRESSION INDEX 1.132

SWELLING INDEX .083

MAXIMUM PRECONSOLIDATION STRESS $k_s f$.18 - .34

INITIAL VOID RATIO 3.481

INITIAL WATER CONTENT 121.25

INITIAL SATURATION 94.04

SAMPLE IDENTIFICATION

CORE NUMBER B-6 UD-3

DEPTH 16 Feet

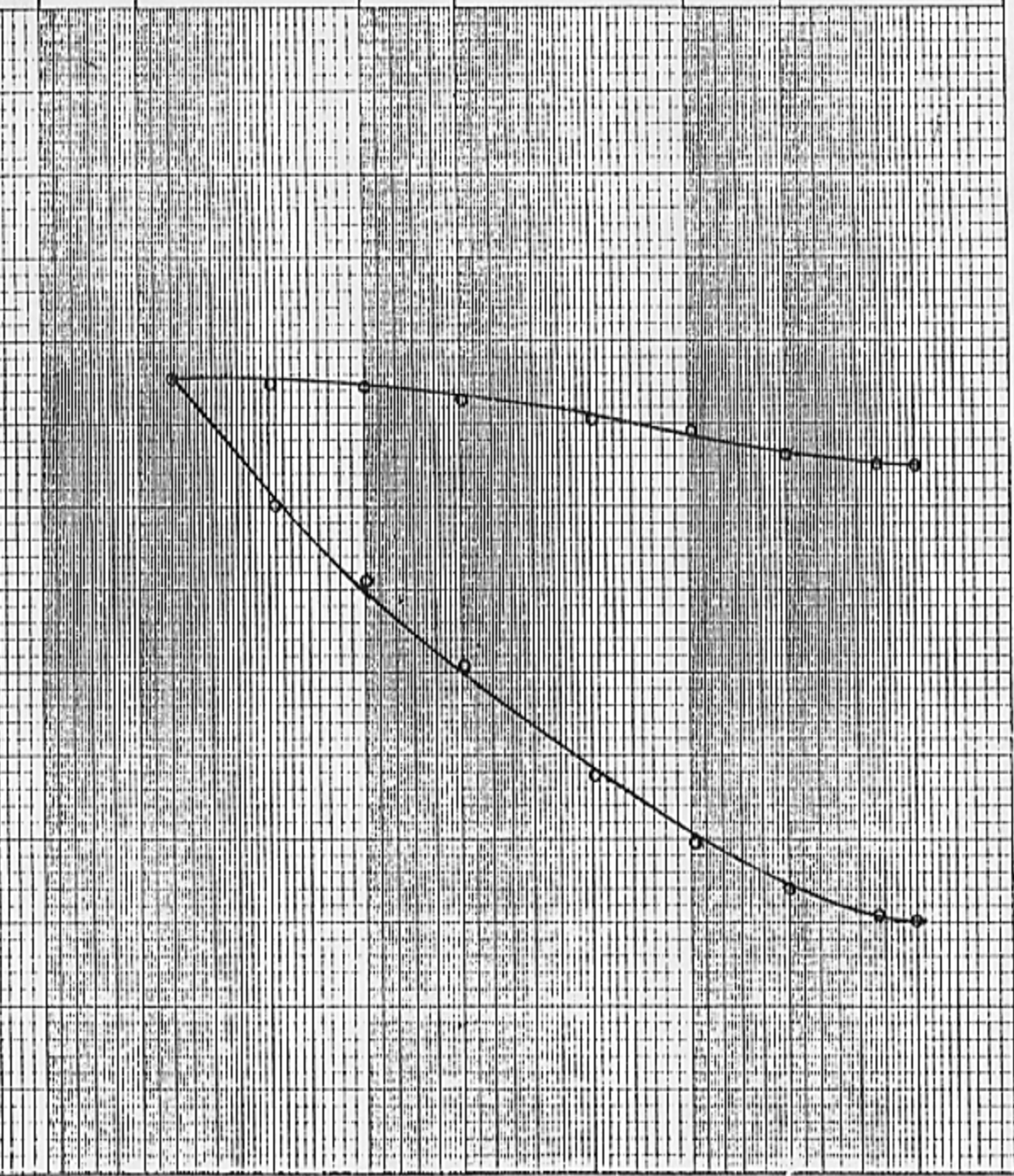
CLASSIFICATION Gray to Black CLAY (CH)

NK5-1175C

% STRAIN

EFFECTIVE VERTICAL STRESS $k_s f \times 10^{-1}$ σ_v

LAW ENGINEERING



LAW ENGINEERING TESTING COMPANY
CONSOLIDATION TEST DATA

PROJECT NAME & NO. ARE CRANEY ISLAND NK5-1175C
BORING NUMBER IS B-6 UD-3
SAMPLE IDENTIFICATION IS GRAY TO BLACK SOFT CLAY (CL)

SPECIFIC GRAVITY = 2.70 INITIAL WET UNIT WT (PCF) = 83.19
WET SAMPLE WT (GM) = 80.43 INITIAL WATER CONTENT (%) = 121.25
VOL OF SAMPLE (CC) = 60.33 INITIAL SATURATION (%) = 94.04
DIA OF SAMPLE (IN) = 2.50 INITIAL VOID RATIO = 3.4811

SAMPLE INUNDATED AT .0 KSF
SQUARE ROOT OF TIME METHOD
DOUBLE DRAINAGE
NO STONE CORRECTIONS

TEST DATA REDUCTION (INITIAL, PRIMARY & SECONDARY)

STRESS KSF	DO (IN)	D 90 (IN)	DEND (IN)	T90 MIN	SAMPLE HT AT DEND	% INT	% SEC
.02	.2834	.2457	.2442	9.80	.7073	1	-6
.026	.2315	.2315	.2313	.30	.6944	100	1
.05	.2312	.2302	.2297	2.50	.6928	8	24
.1	.2294	.2116	.2097	11.80	.6728	1	0
.2	.2096	.1874	.1863	9.65	.6494	0	-5
.5	.1862	.1429	.1366	6.25	.5997	0	2
1.0	.1216	.1008	.1008	4.00	.5639	39	-6
2.0	.0946	.0736	.0654	2.00	.5285	20	16
4.0	.0506	.0126	.0000	3.50	.4631	25	12
2.0	.0000	.0016	.0023	1.00	.4654	0	22
1.0	.0027	.0043	.0060	1.00	.4691	18	41
.5	.0062	.0096	.0107	20.00	.4738	5	15
.2	.0118	.0210	.0214	5.20	.4845	9	-5
.1	.0217	.0268	.0271	4.90	.4902	5	-4
.05	.0274	.0359	.0362	14.00	.4993	3	-7
.026	.0363	.0366	.0369	1.40	.5000	23	38
.02	.0371	.0372	.0376	.75	.5007	64	55

TEST DATA REDUCTION FOR PRIMARY & INITIAL, ELIMINATING SECONDARY

STRESS KSF	SAMPLE HT	STRAIN IN	%	VOID RATIO	*AVG *STRESS	CV FT2/DAY	PERM FT/DAY	MV FT2/KIP	CC
.02	.7073	.00	3.226	*	.0	3.41	.64E+00	.30E+01	.666
.026	.6946	.80	3.150	*	.0	.41	.19E-02	.71E-01	.025
.05	.6934	1.97	3.143	*	.0	.08	.30E-02	.57E+00	.399
.1	.6733	4.81	3.023	*	.1	.09	.22E-02	.35E+00	.492
.2	.6486	8.31	2.875	*	.2	.12	.20E-02	.23E+00	.724
.5	.6003	15.12	2.587	*	.4	.17	.14E-02	.11E+00	.756
1.0	.5622	20.51	2.359	*	.8	.30	.10E-02	.42E-01	.586
2.0	.5327	24.69	2.183	*	1.5	.14	.49E-03	.40E-01	.132
4.0	.4757	32.75	1.842	*	3.0	.48	.56E-04	.13E-02	.035
2.0	.4775	32.50	1.853	*	3.0	.49	.14E-03	.31E-02	.043
1.0	.4796	32.19	1.866	*	1.5	.02	.26E-04	.11E-01	.079
.5	.4836	31.63	1.889	*	.8	.10	.48E-03	.53E-01	.170
.2	.4949	30.03	1.957	*	.4	.11	.81E-03	.84E-01	.118
.1	.5009	29.18	1.993	*	.2	.04	.95E-03	.28E+00	.193
.05	.5106	27.80	2.051	*	.1	.40	.87E-03	.26E-01	.009
.026	.5111	27.74	2.054	*	.0	.74	.47E-02	.73E-01	.016
.02	.5114	27.70	2.055	*	.0				

